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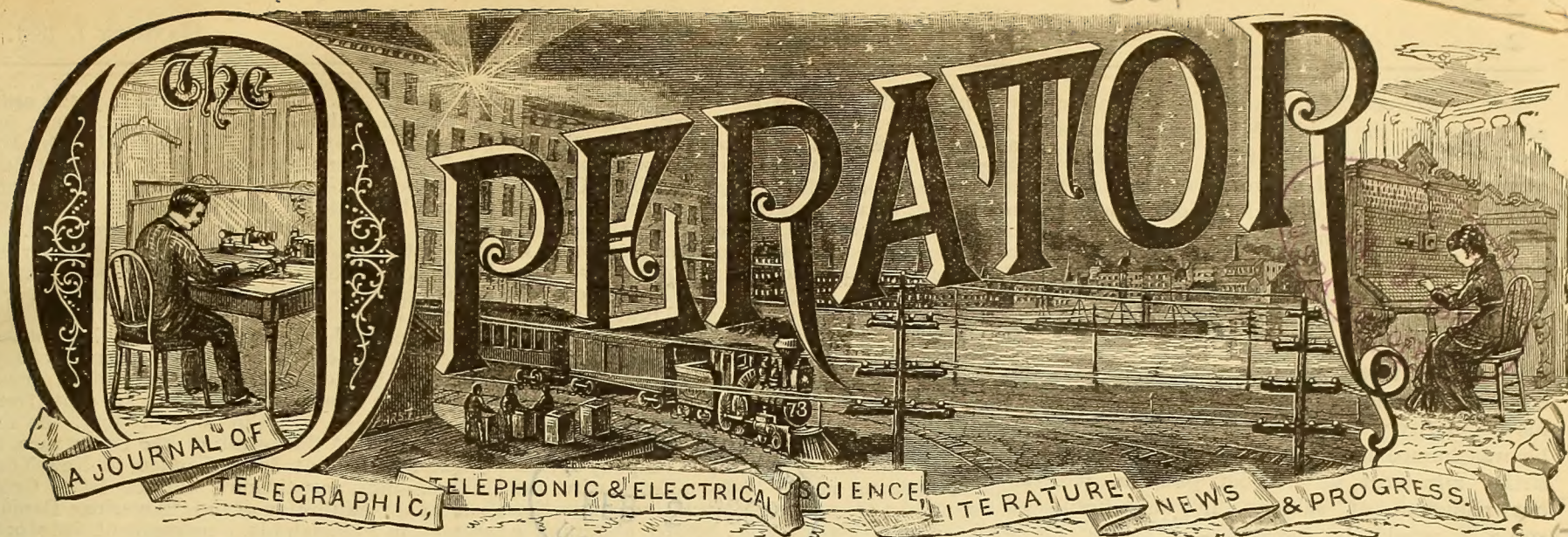












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### THE OPERATOR'S WOOING.

John Sampson was a "dash"—ing youth,  
He courted Tom Smith's "dot"—er;<sup>1</sup>  
A "space" there was, to tell the truth,  
'Tween Mag and he who sought her.

To "Telegraphic"<sup>2</sup> story, he  
"Coils"<sup>3</sup> first upon her father,  
But Thomas said "ground"<sup>4</sup> and see  
My better half—her mother.

John then "cut out" to find her ma;  
He "quad"<sup>5</sup> scarcely keep his courage;  
He knew she was more "cross" than pa  
(They sometimes are at her age).

When he'd rela(y)ted<sup>6</sup> to the dame  
Their love and wished "connection;"  
A "sunder" answer never came  
To one who sought protection.

"I told 'Magnet'<sup>7</sup> to be too fast,  
But treat you with "pole"—iteness;  
'Condenser'<sup>8</sup> wit to make it last  
And save herself contriteness.

"'Repeater'<sup>9</sup> conversation once;  
'Transmitter'<sup>10</sup> love on paper;  
'Battery'<sup>11</sup> a poor man than a dunce  
Whose sense and wealth is vapor."

"'Ohm' I!" said John, "What joy is this?  
E'en th' 'button switch'<sup>12</sup> I wear  
Will be a 'message' of that bliss,  
When pressed by worldly care.

"Of th' 'rheostadt'<sup>13</sup> we have each day  
'Adjust'<sup>14</sup> amount I'll do;  
'Switch board'<sup>15</sup> bills I have failed to be  
I'll have sent in to you.

"'Single wire'<sup>16</sup> no longer Mag—  
This 'duplex'<sup>17</sup> for the preacher—  
My 'armature'<sup>18</sup> side 'll never fag—  
Come here, my precious creature."

"30."

<sup>1</sup>Daughter. <sup>2</sup>Tell a graphic. <sup>3</sup>Calls. <sup>4</sup>Go round. <sup>5</sup>Could. <sup>6</sup>Related. <sup>7</sup>Mag not. <sup>8</sup>Condense her. <sup>9</sup>Repeat her. <sup>10</sup>Transmit her. <sup>11</sup>Better a. <sup>12</sup>Buttons which. <sup>13</sup>Roast that. <sup>14</sup>A just. <sup>15</sup>Which board. <sup>16</sup>Single we are. <sup>17</sup>Double X—i. e., \$20. <sup>18</sup>Arm at your.

### Our National Portrait Gallery.

#### II.

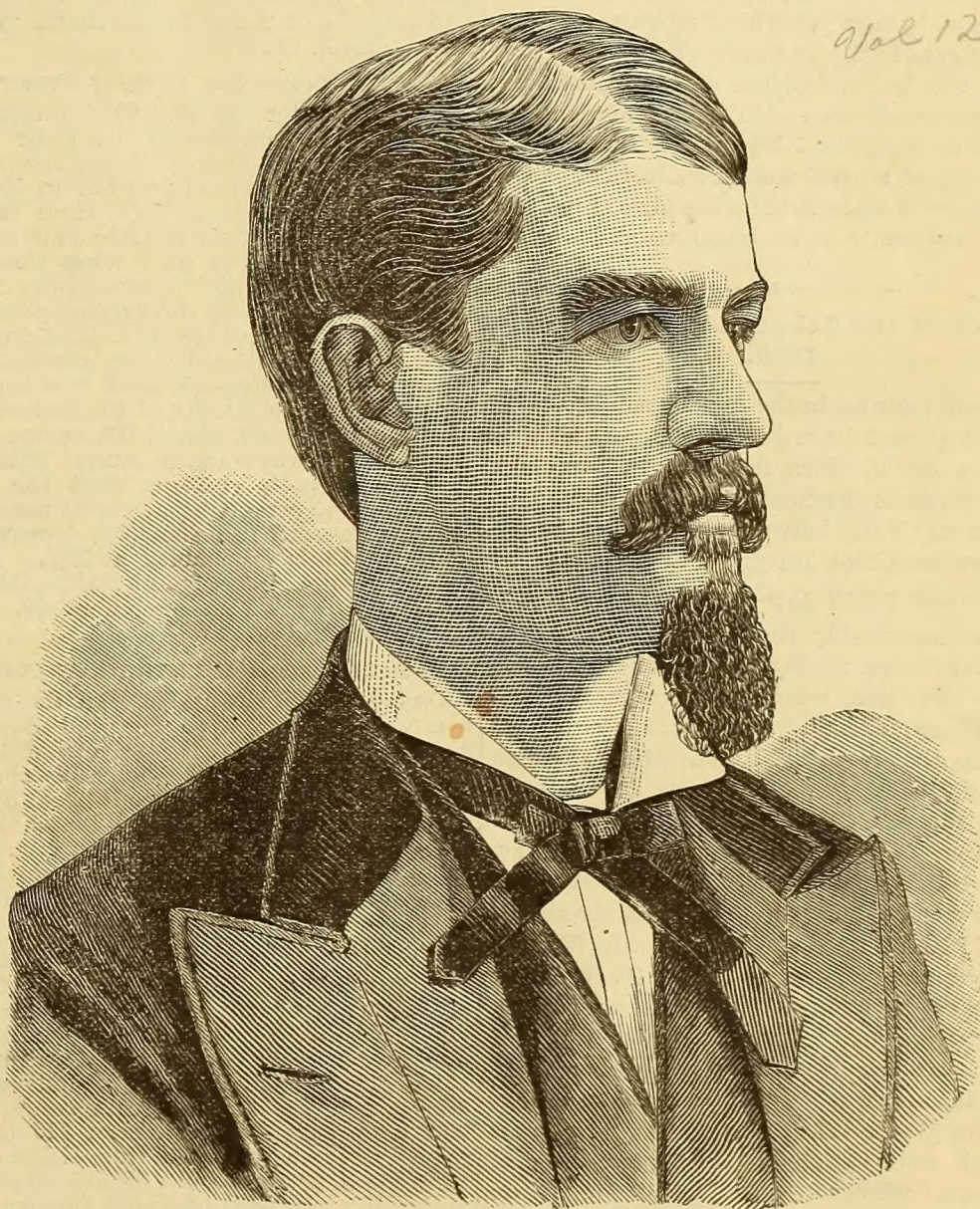
ALBERT S. AYRES, OF CINCINNATI.

Albert S. Ayres, the subject of this sketch, adds another to the long list of Ohio men who have achieved greatness in the different walks of life. He was born in Dayton, Ohio, Sept. 9, 1849, and is therefore a trifle over thirty-one years of age. Though yet a young man, over half his life has been spent in his chosen profession, and no member of the craft is held in higher esteem than he whose memoir is thus briefly outlined.

Mr. Ayres made his first bow to the telegraphic

world in the Spring of 1864, at which date he entered the Western Union office at Dayton as a messenger. The office at that time was under the management of Mr. I. H. Kierstead, a gentleman whose wise counsel and careful training

long been a mooted question between telegraphers of the old and new school, but if my opinion is worth recording, I should place it on the side of the former. From the very beginning Ayers developed extraordinary ability as a



ALBERT S. AYERS.

he is indebted for much of the success that has crowned his subsequent life.

At the age of fifteen the youthful mind takes on impressions easily, and the bright-faced lad made rapid progress in both branches of the business, theoretical and practical.

There were several registers in the office, and Ayres first learned to receive on paper. Whether or not the perfection of his clean-cut "Morse" is due to the fact, I am unable to say. This has

rapid and correct sender, and those who knew him in later years, when maturer judgment gave intelligent direction to his sending, may well imagine how fearfully he "roasted" the plugs on the different "way" wires centering in Dayton. The writer was one of those unfortunates, and he vividly recalls to this day the thrill of horror that would come over him as he nervously answered "i i," and attempted to receive his terrific sending by sound.



In the winter of 1867, or less than two years after entering the service, Mr. Ayres accepted a situation in New Orleans. Here he remained a year, gaining marked prominence through the South as a wonderfully clever operator. He next removed to Omaha, where he remained three years. While employed in this office the celebrated telegraphers' strike of 1870 occurred. Mr. Ayres was a member of the League, and, though perfectly satisfied with his situation, chose to sacrifice self-interest to principle and accordingly became one of the strikers. Such was his popularity with the manager, however, that he was immediately, on the conclusion of the strike, reinstated in his old position, without reduction of salary. In our limited space it would be impossible to follow his wanderings in detail. Cincinnati, New Orleans and Omaha are the places that know him best, but he has resided for a greater or shorter length of time in Pittsburg, New York, Boston and Memphis. He is now employed by the American Union Company at Cincinnati. In person, Mr. Ayres is of medium height, solidly and compactly built, an *elegante* in appearance, and of pleasant and agreeable manners. He possesses a pair of coal-black eyes surmounted by heavy, arching eyebrows, which meet the gaze firmly and unflinchingly, and are, perhaps, the best indication of his character—brave, honest and true. He is the only son of a widowed mother, who fairly idolizes him with all the strength of a good mother's affection, and it is a pleasure to state that he has always proved, in every respect, a most generous and dutiful boy.

#### A Review of the Telegraphic World During 1880.

The great features in the American telegraphic year just passed have been the unprecedented prosperity on all sides, the wonderful change for the better in the condition of operators, and the vigorous rivalry between the Western Union and American Union Telegraph Companies.

##### WESTERN UNION AND AMERICAN UNION.

One year ago to-day the American Union had about fifty offices, mostly east of and including Buffalo, and was receiving regular business when offered, though not soliciting any. At this time the Western Union (the American Union not being formally opened for business) reduced the rates between New York and St. Louis from 75 to 60 cents, and between New York and Chicago and other places from 60 to 50 cents for ten words. It was then making a clear profit of half-a-million dollars a month (*Western Union quarterly report, made Dec. 10, 1879*).

At eight o'clock on the morning of Jan. 26, the long-talked-of "American Union" opened for business along its entire line, and then commenced in earnest what has since been known as the "Telegraph War." The American Union practiced some high-handed proceedings in throwing off Western Union lines from certain railroads and substituting their own, notwithstanding that the Western Union had exclusive contracts with those roads. On the other hand, the older company also frequently took the law into its own hands, and, whether countenanced by the officers of the company or not we cannot say, the spectacle of hired gangs of ruffians cutting down and carting away American Union poles, and other unlawful acts, became entirely too frequent.

Notwithstanding these drawbacks, the progress of both companies has been simply marvelous. During the year the Western Union has erected no less than 2,700 miles of poles and

strung 22,000 miles of wire—the largest construction in any one year in its history. The American Union has done even more. On the 15th of May (the first anniversary of its incorporation) it had extended its line as far south as Chattanooga, Tenn., and controlled or owned 50,000 miles of line and 1,550 offices. Since that date it has extended its lines to every important city in America. It has acquired complete working connections, for long terms, with the most important railroads in the United States, among which are the Pennsylvania Railroad and its extensive branches, the entire Wabash system, the Baltimore & Ohio Railroad, and the Union Pacific Railroad. It has also purchased many local telegraph lines in different sections of the country; has leased for ninety-nine years the entire lines of the Dominion Telegraph Company of Canada, comprising nearly 10,000 miles of wire, and has secured a twenty-years' exclusive connection with the new French cable, besides obtaining a working connection with the Direct cable, through the lease of Canadian land lines. Great reductions in rates have followed; we fear rather too precipitately. Ten words from the East to points in Colorado that formerly cost \$2 now cost \$1.25; to New Orleans 75 cents that formerly cost \$1.00, and proportionate reductions to other points. The Western Union maintained its own tariff schedule, regardless of the rates charged by its rival, until last month, when it threw off its reserve, and adopted the lower rates charged by the American Union. It had, however, meanwhile, fought the American Union in the matter of rates with its "dummy," the A. and P. Co.

##### THE COMPANIES IN WALL STREET.

In the Winter of 1879-80 Western Union, following the great rise in the price of other stocks, sold up to 116. When the American Union first showed a disposition to lock horns with it, by displacing its wires from the Union Pacific, the Baltimore & Ohio and other railroads, substituting its own wires therefor, the price of Western Union dropped from 116 to 88 in one month. Under the varying phases of the "War"—such as rumors of a joint-purse agreement, Jay Gould obtaining control of the Western Union, etc.—its stock was kept wavering during the remainder of the first ten months of last year between 88 and 116, no one knowing which way it was going to jump. After the last quarterly report, showing that the reduced dividend (1½ per cent.) absorbed nearly all its surplus, its stock has shown a downward tendency, and it is now quoted at 78½. American Union was not publicly marketed until late in the Fall, when it was first quoted at 60, and now stands at 71¾.

##### THE TELEGRAPH IN THE LAW COURTS.

Owing to the rivalry between the competing companies, the telegraph has been the subject of a great many legal decisions during 1880, none of which, however, have materially changed the situation. The most important legal decision of the year was given by Judge Blatchford in the U. S. District Court, in this city, sustaining the Page patent, a full account of which will be found in THE OPERATOR for March 1, 1880.

##### THE BOOM IN SALARIES.

As might be expected, the revival of trade caused an unprecedented demand for competent operators during the past year, and a consequent increase in salaries, which had previously been reduced to the lowest possible living rate. First-class men, who, prior to the advent of the American Union and the great increase in traffic, had been glad to accept from \$50 to \$75 per month, are now receiving, from either company, from \$75 to \$90, and even up to \$100 per month, with a fair prospect of a still further advance. As an example, it may be mentioned that on the night of the Presidential election, in large towns where every newspaper, every political club and many private parties desired special wires, five dollars a night was offered for the services of operators, without takers.

##### FAST TELEGRAPHING.

Under these encouraging circumstances, with two Presidential nominating conventions in session during the summer, a Presidential election late in the autumn, and several foreign wars in progress, or impending, with the consequent demand for early news on the part of the general public, some remarkably fast telegraphing has

been developed. In a trial of speed by the ordinary Morse system, in this city, Aug. 22nd, for prizes offered by Messrs. J. H. Bunnell & Co., Mr. W. J. Curtis sent 500 words in 11 minutes and 14¼ seconds, his average number of words per minute being 44.79, and his fastest minute 50 words. It might be mentioned here, that, in answer to a challenge issued by Mr. Walter P. Phillips, another contest is pending, with a view to testing the merits of the Phillips, Delany, and Bunnell keys. On the 28th of June there was published, in the second edition of the London *Times*, news of the same day from Sydney, Australia, the telegram reaching London, apparently, five hours before it was sent from the Antipodes. On the 26th of May, the announcement of the result of the Derby race, in England, was sent from London to New York in 25 seconds, actual time. On the 1st of October, at an exhibition of the "American Rapid" system, in Philadelphia, a message of 200 words was sent, in regular Morse characters, in 11 seconds, and another of 500 words in 29 seconds. Thus, while the great increase in business has demanded extra facilities and speed, the various telegraph companies have not been behindhand in responding to the call.

##### NEW COMPANIES.

Several new companies, fired with a commendable zeal to serve the public interest, have been announced during the past year. The American Rapid was formally opened for business, in this city, July 19th, and is now doing a good business, in its limited sphere. The Mutual Union Telegraph Company, projected by bankers and brokers, is still pushing ahead, and is hopeful of success. Other companies, one projected by Henry W. Pope, to do business throughout this State; and another, by Anson Stager and others, to do a telephone business principally between New York and Florida, have been chartered. "The American and European Commercial News Company," incorporated at Trenton, N. J., Dec. 26, 1879, seems to have fallen through.

##### STRIKES.

Only one strike has been reported throughout the telegraphic world, that being in this city, among messenger boys of the American District Telegraph Company. It took place Oct. 6. Some of the lads were promptly arrested; others became disheartened, and the movement fell through, after a few days' experience.

##### HONORS TO TELEGRAPHERS, CHANGES, ETC.

During 1880 Professor A. Graham Bell has received the Volta Prize of the French Academy. Congress has voted \$15,000 for a statue to Professor Joseph Henry, to be placed in the Smithsonian grounds. Professor Elisha Gray has accepted the chair of Dynamic Electricity, at Oberlin College. Mr. George Walker, of the Gold and Stock Company, of this city, has been made U. S. Consul General at Paris, and sailed for the scene of his diplomatic labors in March last. Mr. Abraham Locke, a well-known telegrapher, has been elected Mayor of Nickerson, Kansas; while ex-Governor Marshal Jewell has done good work for his party as chairman of the Republican National Committee. Dr. Norvin Green, President of the Western Union Telegraph Company, was suggested as a candidate for President of the United States, the *Graphic*, of this city, nominating him, and publishing a portrait of the Doctor. Mr. Cyrus W. Field was honored with a public banquet in this city (Oct. 27), prior to his departure on a tour around the world.

Among other important changes and promotions, during the past year, were the following: General Thomas T. Eckert became President of the American Union, Jan. 1, 1880, succeeding Mr. D. H. Bates, who remains with the A. U. as First Vice-President. Mr. A. B. Chandler, on the same day, succeeded General Eckert as President of the Atlantic & Pacific Telegraph Company. Mr. George B. Prescott, for ten years electrician of the Western Union, resigned (April last) to take charge of the G. & S. Co., as Vice-President and Executive Manager. Mr. Frank L. Pope also resigned from the Western Union (in May last) to engage in business for himself, as a patent solicitor. Mr. James Merrihew, Superintendent of the Western Union, Sixth District, has been made Assistant General Superintendent, with headquarters in this city, Assistant Superintendent William B. Gill having charge of the Sixth District. Mr. Frank W.



Jones, formerly Assistant Manager at Chicago, has been made Circuit Manager of all the Western Union lines, with headquarters in this city.

#### DEATHS OF PROMINENT MEN.

Death has been lenient with our leading men during the year just closed. England has lost Sir William Fothergill Cooke, and Mr. Julius Beer, the editor of the *Electrician*. In this country, our most notable loss has been in the death of General Albert J. Myer, Chief Signal Officer, at Buffalo, N. Y., Aug. 24. A well-known inventor, Mr. Charles T. Chester, has also been taken away, dying at his home at Englewood, N. J. France has lost her eminent electrician, M. J. M. Gauguain.

#### TELEGRAPHIC ILL-WINDS.

The elements have granted us a favorable year, but not entirely without disaster. Fires have been rather too frequent to be pleasant, the most disastrous being the burning of the Telegraph Supply Company's building, occupied by the Brush Electric Light Manufacturing Co., at Cleveland, Ohio (May 6), entailing a loss of \$250,000. The Western Union office at Wakenda, Mo., was burned (March 16), and the Dynamo-Electric Company, of Newark, N. J., lost \$12,000 by fire, Jan. 26. At Pensacola, Fla., Dec. 10, a fire which destroyed an immense amount of property also obliterated the Western Union office and the Telephone Exchange. The cable manufactory of Manly & Sons, Philadelphia, suffered by fire to the extent of \$15,000 on the 14th of December. We ought also, perhaps, to mention the loss by fire of Mr. Jay Gould's conservatory at Lindenhurst, entailing a loss of nearly \$200,000. In England, the general office at Manchester was burned (Oct. 24), deranging the entire telegraphic system converging there.

The telegraphic system has suffered severely twice during the past year from violent storms—once in April and again in October. On the former occasion the Pacific coast was cut off from the East for the period of five days.

Lightning has killed a great many people on this continent, and the singular fact has been noticed that male victims have greatly exceeded females. The electric light has killed two men—one in a theatre in England, and the other aboard of the Czar's yacht *Livadia*—and seriously injured several others. A common "shocking apparatus," hawked about by an itinerant showman, has killed a man in New Haven, Conn.

#### THE ELECTRIC LIGHT.

Although very slightly improved during the past year, the electric light has been gradually making its way into public favor. The Jablochkoff light has been introduced in Teheran, the capital of Persia. Mount Vesuvius has been illuminated by the electric light. It has been adopted on many steamships and in various towns on this continent and in Europe. The Brush Company, which has 5,000 lights now in use, has successfully lighted the water front of Montreal, since last July, under a contract stipulating that the light shall always be sufficiently powerful to enable one to read brevier type at a distance of 175 feet. The same company has also extensively introduced the light in this city. From January to January, Edison has confined himself mainly to inventing excuses and his patent medicine, "Polyform."

#### NEW INVENTIONS.

The most interesting invention of the year has been the Photophone, by Professor A. Graham Bell, by which he transmits intelligible sounds through a ray of light, without the aid of wires. For communication between ships at sea, between light-houses and passing vessels, and between stranded ships and the rescuers ashore, this is an invaluable discovery. There has been some talk of the "Diaphote"—for seeing by wire—but nothing has been developed thus far. The Delany Patent Relay—a most ingenious invention—renders telegraphers entirely independent of the Page patent. A patent was issued, July 13, to Mr. Stephen D. Field, for an electric railway, although a similar contrivance has been working successfully in Berlin for some time. For medical science, M. Trouvé has given us the electrical polyscope, for illuminating the internal organs of living bodies. A scheme for automatic repeaters or relays for Atlantic cables has been described, but it was patented fifteen years ago and will probably not be a success now. Phillips' system of

steno-telegraphy has marked the past year for inventions in rapid transmission. Although older than the past year, it was generally brought into notice in September last by the telegraphing in full, from Washington to Cincinnati, of Senator Conkling's speech, containing 16,000 words, in five hours. Three new and improved telegraph keys have been placed in the hands of our operators, the inventions of Messrs. W. P. Phillips, P. B. Delany and J. H. Bunnell, respectively.

#### OUR MUTUAL AID SOCIETIES.

The Telegraphers' Mutual Benefit Association has passed a prosperous year. There were twenty deaths out of a total membership of 2,138, although only eight assessments were made, the remaining fees being paid out of the reserve fund. The total receipts during the past year were \$19,708, and the expenses \$17,548, leaving a balance of \$2,160. The reserve fund is now \$21,000. The "Second Division" numbers 125 members. The Telegraphers' Mutual Aid Society, a local organization, was formed in this city, Feb. 22, and is now in a flourishing condition. It pays \$7 a week to sick members, and \$25 to the heirs of deceased members.

#### TELEGRAPHIC CONVENTIONS.

There were three of these gatherings during 1880. The first was the third annual meeting of the American District Telegraph Companies, at Baltimore, July 12. The other two were held on the 7th of September. They were, the initial convention of the National Telephone Association, at Niagara Falls; and the Reunion of Pioneer Telegraphers' at Cincinnati. About 125 "Old-timers," from all parts of the country, sat down to dinner. The senior telegrapher present was the ever popular James D. Reid, whose telegraphic life dates back to 1845. Speeches appropriate to the occasion were made, and steps were taken toward effecting a permanent pioneer telegraphers' organization.

#### TELEGRAPHIC JOURNALISM.

Our peculiar literature has been greatly stimulated during the past year, and has kept well up with the rapid progress of telegraphy.

The *Journal of the Telegraph*, the organ of the Western Union Telegraph Company, under the able management of the courteous and experienced James N. Ashley, has fully maintained its high standard as a scientific journal, and a record of purely electrical progress.

THE OPERATOR has just completed another year of unprecedented prosperity. On the 1st of July its size was permanently increased to 16 pages, thus giving to America the distinction of publishing the largest telegraphic paper in the world; and it has on several occasions exceeded its own high standard by publishing issues with 20 and 24 pages to each number. Its "National Portrait Gallery," commenced December 1, promises to make a very interesting and popular feature of telegraphic journalism in the future.

The telegraphic world has reported the commencement of three telegraphic journals, two—*The Magnet* and *The Telephonic Exchange Reporter*—on this Continent, and the other—*L'Electricite*—in St. Petersburg, Russia.

America has to record the deaths of two telegraphic papers for the year. The *Magnet*, under the editorial management of Mr. Joseph Christie, came into existence February 14, under the most favorable circumstances, ran helter-skelter through a brilliant career of seven months, sinking a "barl" of money, and, without showing any premonitory symptoms of decay, suddenly dropped out of sight, September 15. The *Magnet* has been gracefully referred to as one of the brightest and most attractive asteroids that ever shot across the telegraphic firmament. The other deceased journal, the *Telephonic Exchange Reporter*, published at Cincinnati, Ohio, made less noise in the world than the cheery *Magnet*, but it was equally well managed, and was much regretted when it went down to join Mr. Christie's pet scheme in the limbo of telegraphic journalism.

Three new books have been placed before the profession in the year just closed. The *American Popular Dictionary*, although not particularly telegraphic in its nature, has been well patronized by the profession. *Telegraphic Tales and Telegraphic History* struck a sympathetic vein everywhere, and the sales have been immense. The third book, Naudet's *Electric Batteries*, was also well received. In the catalogue of new works we ought also, perhaps, to include

Mr. T. D. Lockwood's clever "Notes and Queries," appearing periodically in THE OPERATOR, and which have attracted wide attention for their simple but accurate and sweeping explanations of electrical science.

#### THE TELEPHONE.

Consolidation has been the rule among the telephone people in all directions. During the year a contract has been entered into, harmonizing and consolidating the Gray, Edison, Phelps, Dolbear and other telephone patents controlled by the Gold and Stock Telegraph Company, with the Bell, Blake and other inventions owned by the American Bell Telephone Company. The Western Union, in consideration of turning over at cost some telephone exchanges it had established, secured stipulations in the contract protecting that company against competition in the telegraph business by the licensees of the telephone, and giving to that company an exclusive license to use the telephone for telegraph purposes. The Gold and Stock Telegraph Company and American Speaking Telephone Company surrendered the manufacture and leasing of telephones, and obtained royalties on the gross rentals, amounting to an average of about one dollar per annum on every telephone in use. The effect of the settlement was the termination of expensive and hazardous litigation, securing to the Western Union Company protection from competition and a valuable franchise. Since then, however, the American Union has shown a disposition to question their right to this franchise, and a suit is now pending, in Harrisburg, Penna., in which the American Union Company seeks to force the Telephone Company to put telephones in the American Union, as well as the Western Union offices. This it compelled the company to do in a similar suit some months ago in St. Louis, and also more recently in Columbus, O.

In August last, the Bell Telephone Company, of Canada, closed with the Montreal Telegraph Company for the purchase, for \$75,000, of the latter's telephone business and plant. This gave the Bell Company complete control of all the telephone business of Canada, except in the city of Toronto.

In London, where the British Government has been attempting to freeze out the new enterprise, and has just secured a decision in its favor, to the effect that the telephone is an infringement upon the government monopoly of the telegraph, the Bell and Edison Exchanges have been consolidated under the name of the Metropolitan Exchange.

Many successful long-distance telephoning experiments have been reported, the most notable one being under the direction of Superintendent J. J. Dickey, of the Union Pacific Railroad. On the 25th of January that gentleman successfully worked the telephone from Omaha, Neb., to St. Louis, Mo., a distance of 410 miles. The telephone has also been put to good use in discovering faulty cables, without cutting them for tests, where two or more cables lie in close proximity. After raising one of the cables a telephone test will reveal, by induction, whether or not it is the cable required.

A telephonic service meter has been invented, which enables the exchange to keep a record of the length of time each subscriber uses the telephone, and also the number of times he uses the line.

Opera and sermons by telephone, from theatre and church to private houses, have become rather common during the year.

There have been some gloomy predictions of telephone work injuring the sense of hearing in the operators, but no well authenticated case has yet been reported.

#### POSTAL TELEGRAPHY IN AMERICA.

This Utopian scheme has struggled to the surface three or four times during the year, but its promoters have generally met with but cold comfort. A bill introduced into the National House of Representatives, May 3, to establish a Government Postal Telegraph between Boston and Washington and intermediate points, now slumbers peacefully in the pigeon-holes of the Committee on Post Offices and Post Roads. After the reassembling of Congress, last month, a resolution, by Mr. Morrill, was agreed to in the Senate (December 14), ordering an inquiry as to whether or not the existing telegraphic lines interfere with the business of the Post Office Department, and whether telegraphic service should



not be placed exclusively in the hands of the General Government. Among the vaporings of other impracticable beings on this subject is the recommendation of Postmaster General Maynard, in his annual message to Congress, favoring postal telegraphy.

The National Board of Trade adopted a resolution, at Washington, D. C., Dec. 17, declaring that "the results of the operation of the telegraphs in Great Britain as a part of the postal system of the country are such as to commend the adoption of a similar system to the people of the United States."

#### MISCELLANEOUS EVENTS.

In January a bill was introduced in the Senate by Mr. Saulsbury, defining and establishing the status of communications transmitted by telegraph; and another, with the same end in view, was introduced in the lower house by Mr. Singleton. There was a good deal of talk, as is usual in Congress, upon this subject, but no definite action was taken.

The past year has seen one or two marriages by telegraph, but we have probably heard the last of that peculiar kind of idiocy.

The telegraph has earned the confidence of the public in preserving its secrets, there being only two cases of misplaced confidence reported throughout the world. One of them was plainly an error, but one by which the Western Union placed the originals of two dispatches of one political organization in the hands of its rival. This, however, was one of those lamentable mishaps which may be said to be unavoidable. The other case occurred in Dublin, Ireland—an operator being detected in divulging the contents of a message, for which he was promptly arrested, tried and sentenced to two months in jail.

The telegraphers have not been behind hand in physical exercises, some of them making records in athletic sports nearly equal to the best professionals. In sculling, walking, running and base-ball, the telegraphers have been well up to the front. In this city, May 5, Mr. T. Marrin, from the Western Union office, ran two miles in 12 minutes 14 $\frac{3}{4}$  seconds; and, during the fall, two well-known officials rode bicycles from Saratoga to Philadelphia, by a route which made the distance over 300 miles.

#### OCEAN CABLES.

The chief matters of interest in Atlantic cable affairs during the past year have been the "Cable War," and the great increase in business.

The Compagnie Française du Télégraphe de Paris à New York, better known as "the New French cable," although completed in November, 1879, was only opened for business Jan. 26, 1880, simultaneously with the opening of the American Union Telegraph Company. It commenced business by charging 75 cents per word, the same rate as the old companies. The "war" soon spread, and on the 1st of February the Anglo-American Company reduced its rates to France, and subsequently to Great Britain and Ireland, from 75 to 12 $\frac{1}{2}$  cents per word. In a few weeks the New French Cable reduced its rate to 50 cents per word; the Direct Company followed suit with a 50 cent rate, while the Anglo-American still maintained the 12 $\frac{1}{2}$  cent rate. By June the Direct Company came down to 37 $\frac{1}{2}$  cents per word, leaving the New French Company alone with the 50 cent rate. Cable business then became enormous, the Western Union Company having a quadruplex and duplex at work night and day to North Sydney, and a quadruplex to Duxbury, "feeding" the ocean lines. So the situation remained until October 1, when, by mutual consent, the rate on messages to Great Britain was fixed at 50 cents per word, it being understood that the 12 $\frac{1}{2}$  cent rate to France should continue until December 1.

The year 1880 has seen a great increase in ocean cables all over the world, nearly all of which have been duplexed. The Anglo-American Company has laid a new cable from Valentia to Heart's Content. This cable was laid in the remarkably brief period of eleven days—between August 10 and 21—and is known as "the 1880 cable," although it includes the shore end of the abandoned 1866 cable. During last fall the Anglo-American also laid a new three-conductor cable between Placentia Bay, N. F., and Lloyd's Cove, C. B.

Cables have also joined up the most remote parts of the world during the past year. Block Island has been connected with the Massachu-

setts coast. A cable laid in November last, from the Island of Grand Menan, in the Bay of Fundy, has afforded the inhabitants of that region their first telegraphic communication with the outside world. Cables have been laid during the year across Cook's Straits, New Zealand; from Manila to Hong Kong; along a great part of the western coast of South America; and cables now connect all parts of Australia and New Zealand with Java, Singapore, Malacca, Penang and, of course, the rest of the world. Several cables have also been laid in the Baltic Sea.

Several new Atlantic cables have been projected—two, at least, of which will be laid and controlled by American capitalists. Hitherto Atlantic cables have been exclusively Old World affairs. They will probably be laid from Penzance, England, to Whitehead, Nova Scotia, touching at Sable Island. Another one—the "European, American and Canadian Cable"—has been planned in Canada. A cable from the European continent to Iceland has also been talked of; the Mexican Government has approved a contract for a cable across the Gulf of Mexico, connecting Mexico with the United States; and it is hoped that, during this month, Mr. Cyrus W. Field (who eats his New Year's dinner to-day in Hong Kong) will materially advance the prospects of a Pacific cable from California to China, via the Hawaiian Islands.

Mishaps to the cables have been remarkably few during the past year, although the Anglo-American is reported to have suffered twice. Its 1873 cable broke off the Irish coast in April, but was speedily repaired, competition then being at its height. In November last its Brest cable was reported broken 230 miles from Brest. Stormy weather prevents its repair at present. In view of the Anglo-American having recently raised its tariff, and the French Government objecting to the rise on this particular cable (a right obtained by virtue of certain landing concessions) the "break" was, to say the least, an agreeable one for the company, since it has two other cables on which to do business at the higher tariff. The New French Cable was broken during the month of May, between St. Pierre and Brest.

The Chilians, in prosecuting their unrelenting warfare against Peru and Bolivia, have introduced some knotty questions for international lawyers to wrangle over, by resorting to the uncivilized expedient of cutting international telegraph cables. They have cut the submarine cables laid by the West Coast of America Telegraph Company, and the subject has been already brought to the notice of the British Parliament. This may, however, result in the adoption of the suggestions of Sir Travers Twiss, regarding an international treaty protecting telegraph cables in time of war.

The proposed scheme for a cable from New York to Holland, France and Portugal, via the Azores and Land's End, in England, does not seem to be flourishing. The deposit of \$100,000 required by the Portuguese government was not made at Lisbon within the required period, but the time was extended until December.

#### THE TELEGRAPH ABROAD.

The telegraph has been greatly extended abroad, England being far behind Germany and France in this respect. The United Kingdom has now 3,924 offices and 1,407 railway stations open for telegraphic work, making, in all, 5,331 telegraph offices. The total number of telegraphists employed is 5,611, of whom 1,556 are women. Their work has increased 20 per cent. during the past fiscal year. The Central Station in London now employs a staff of about 1,450, of whom 500 are girls. The needle instrument has been gradually superseded by the Morse, and is now worked only in connection with small offices. Duplex working has become quite common, and the quadruplex is no longer a novelty there. The Automatic system is still extensively used, and transmits business at the rate of 200 words a minute. In addition to the land lines, 707 miles of submarine cable connect different parts of the United Kingdom. The pneumatic tube system has also been largely extended there, in place of our "pony," or city wires. The central office in London collects messages in this manner from twenty principal branch offices, the little box bringing its bundle of messages from Charing Cross in four minutes, and from the House of Commons in seven minutes. The same system has been introduced extensively in Liverpool, Manchester, Birmingham, Newcastle, Glasgow

and Dublin, making the total length of pneumatic tubing used by the Post Office Department nearly 28 miles.

France and Germany have both improved their telegraphic systems wonderfully, although we hear less from them than from England. The last report from Germany showed that there were then 1,471 telephones in use there.

In Cyprus, lately acquired by the Jingo, the people have taken very kindly to the telegraph, which has led "Her Majesty's High Commissioner" to report that, contrary to his expectations, "the telegraph is being used by the public far more than I thought it would be."

The quadruplex has been introduced into Australia during the past year; and the Post Office and Telegraph Departments of Queensland have been amalgamated.

Tasmania, by the last reports (for 1879), possessed 731 miles of line and 62 offices, while 79 persons were employed during the year in transmitting 88,832 messages.

India, with 18,000 miles of line (44,000 miles of wire) and 108 miles of cable, sent 1,400,000 paid messages during the year.

Mexico has slightly increased her telegraphic facilities, and has now 10,000 miles of line.

The Hawaiian Islands, Alaska and China are all using the telephone.

By the construction of land lines, during last year, Cabul, Afghanistan, Eastern Siberia, Persia in Asia, and Cape Town, and the Transvaal in Africa, have been connected with the outside world.

#### The Electric Club's Christmas Dinner.

In accordance with the rule of all high-toned organizations, the Electric Club sat down to a grand dinner at Relay Hall, in this city, on Christmas Day.

Mr. John Lenhart was not present.

Old Dad Skoule, wrapped in impenetrable dignity, presided, with Mr. Manager Sniffle on his right hand, Press Operator Saltem on his left, and Superintendent Skinner at the opposite side of the table. Letters of regret were read from President Hayes and others. A true telegraphic spirit of Christmas conviviality pervaded the gathering, notwithstanding the absence of Mr. Lenhart, and mistletoe, ivy and holly were not more plentiful than the steaming boar's head, the general good cheer and the overflowing wassail bowl.

One of the great features of the evening was the evident rivalry existing between Superintendent Skinner and the venerable president of the festive board, Old Dad Skoule. The superintendent, being disappointed in not having been called upon to preside, had evidently got it into his head that "Old Dad" was his hereditary foe, and the source of all evil. Thus, when Chief Operator Brown sang, "O, Why did She Flatter my Boyish Pride?" and Old Dad Skoule leaned back in his chair in delight and put his thumbs in the arm-holes of his vest, Superintendent Skinner also leaned back in his chair, put his thumbs in the arm-holes of his vest and shot defiant glances across the table at the venerable president. Again, when Night Chief Squeele sang, "The Spring is like a Young Maid That Does not Know her Mind," with thrilling effect, and Old Dad Skoule in his enthusiasm stood up with his hands under his coat-tails, listening intently, Superintendent Skinner stood up also with his hands under his coat-tails, looking proud defiance at the venerable presiding officer. But when All-night-man Fawn feelingly sang "Kathleen Mavourneen," and the weird notes of a cornopion in a subdued tone accompanied the line, "The horn of the hunter is heard o'er the hill," Old Dad Skoule stood up and actually screamed with delight. It was then, for the first time, that Superintendent Skinner arose in his might and attempted to climb over the table with a



vain but bloodthirsty notion of laying violent hands upon Old Dad Skoule. He was restrained by the company at large.

Another novelty was the vocal music as performed at 10:30 P. M., and the vocal music as travestied at 4:30 A. M., as the following beautiful specimen will show :

SONG BY MANAGER SNIFFLE AT 10:30 P. M.

'Tis the last rose of Summer  
Left blooming alone;  
All her lovely companions  
Are faded and gone;  
No flower of her kindred,  
No rosebud is nigh,  
To reflect back her blushes  
Or give sigh for sigh.

The banqueting telegraphers were moved to tears as the splendid basso rolled out the words, "Blooming alone;" and, when the clarion notes of a trumpet, played by Brother Muddle, accompanied the rising voice of the singer, in the line, "No flower of her kindred," and the trombone chimed in on the line, "To reflect back her blushes," the spirit of the most hardened telegrapher sank within him. At this solemn moment, Superintendent Skinner, who had been glaring wildly across the table, arose in his might and attempted to climb over the table, with a vain but bloodthirsty notion of laying violent hands upon Old Dad Skoule. He was restrained by the company at large.

After ablespeeches from Press Operator Saltem, Traffic Chief John Muddle, Assistant Wire Chief Charles Grumm, Old Man Kavanaugh, and Operator Crape, who works the private wire at an undertakers, the vocal music was recommenced and marked, as we said before, a wonderful comparison with the vocal music of the early evening.

SONG BY MANAGER SNIFFLE AT 4:30 A. M.

Tisselash oesher shumner  
Lef' bloom-loan;  
Aller luv' panjuns  
Fay fay-jun gone;  
Naw flower kinjub  
Naw rosh-bud ish ni-i-i  
(Higher and higher until lost in wild ecstasy)  
To reflush (louder) backer freckles  
Or (very loud) give shy for shy.

Tremendous cheering, during which four men, including Superintendent Skinner, were overcome with emotion, and fell under the table.

The company then broke up amid much hilarity, while the band played the Racket Galop. There was a perfect jam in the vestibule, going out, while Superintendent Skinner, still in a homicidal frame of mind, endeavored to reach over the heads of the departing guests, with a vain but bloodthirsty notion of laying violent hands on Old Dad Skoule. He was restrained by the company at large.

All this teaches us that, in telegraphy as well as in everything else, it takes all kind of people to make a world.

#### The British Government vs. The Telephone.

In London, Dec. 20, judgment was declared in the case brought in the Exchequer Division by the Attorney-General vs. the Edison Telephone Company, to compel the defendants to take out a license to use the telephone, on the ground that it is an infringement of the Government monopoly in regard to telegraphs. The Court declared the defendants liable for infringing the privileges of the Postmaster-General, and accordingly rendered judgment for the Crown, with costs.

This case has grown out of the introduction of the telephone into England, and the curious phraseology of the act under which the Crown

acquired all the rights of private telegraph companies, and which defined the term "telegraph" as including any "apparatus" for the "transmission" of messages or other "communications by means of electric signals." Under this act the British Government, some time ago, purchased the several telegraph lines in the United Kingdom, paying therefor the sum of \$50,000,000 and thereby establishing a monopoly of the business of sending telegraphic messages. Soon after the invention of the telephone the Edison Telephone Company was formed in England and was beginning the work of furnishing the people there with the facilities which are so familiar here, when it was arrested by a suit brought by the Attorney-General to compel it to take out a license for the use of its instruments. The ground of the proceeding was that the telephone was an infringement of the monopoly which the government had secured in the telegraph business, and that therefore it could not be used without the consent of the government.

The arguments lasted five days and were participated in by Attorney-General Sir Henry James and Solicitor-General Kay for the Crown, and by Mr. Judah P. Benjamin, Q. C., and Mr. Webster, Q. C., for the telephone company, the last-named counsel having been especially retained because of his well-known aptitude in dealing with cases which involve scientific discussions and comparisons. During the arguments the judges had telephonic transmitters in front of them, and themselves participated in experiments which were made at the suggestion of both sides. The upshot, as we have before stated, was a verdict in favor of the government.

After the decision, Mr. Webster, counsel for the defendants, asked that judgment be stayed pending an appeal. It was eventually arranged that the order of the Court should contain terms allowing the telephone company to continue its operations.

The General Post-office has since issued a notice stating that it is prepared to establish in any town telephonic intercommunication, at the same time holding itself ready to make arrangements for the establishment or continuance of systems of intercommunication introduced by existing private companies. In answer to this notice the Telephone Company advertises that it has exclusive patent rights, and will proceed against the Postmaster-General for any infringement of those rights.

There is another case pending against the Bell Telephone Company, both cases having been instituted before the amalgamation of the two companies.

#### A Chief Operator Nominated by his Associates.

To the Editor of The Operator:

SIR: In your last issue you noticed that Manager Dealy, of the American Union, New York, had inaugurated a plan of allowing a number of his operators to take charge of the office on Sunday, thus giving them an opportunity to acquire practical knowledge that would fit them to become chief operators. Mr. Dealy has gone a step further, by allowing the operators the privilege of electing their own associate chief operator.

On the 22d inst., Mr. Dealy sent a letter to Chief Baker, saying he wished to commemorate the first anniversary of the opening of the office (Jan. 26) by allowing the operators to name one of their number to be appointed assistant chief operator.

He (Mr. Dealy) would like their choice to be one of the operators that was in the office when it was first opened. If after a month's trial the candidate should prove competent to fill the position, Mr. Dealy would confirm his appointment and add ten dollars a month to his salary. This letter created considerable excitement, and a quiet canvass was immediately opened. Within an hour the contest had settled down to two candidates, Con Myers and George Stainton. Mr. Myers has been acting as traffic chief and general utility man in the office. This gave him an advantage to start with. He is well liked, and were it not for the popularity of Mr. Stainton, he would have received a unanimous vote.

Mr. Stainton is still young, but one of the best

operators in the office. He came from the A. & P., when Mr. Dealy left that company to take charge of the American Union. He is a general favorite in the office, especially with the younger operators, among whom he had his warmest supporters in the election. Mr. Myers, however, was declared elected by a small majority. Much regret was expressed because both gentlemen could not be promoted, and some of the operators gave notice that they would not vote, because they could not decide between the two candidates.

Certainly the profession owe a debt of gratitude to W. J. Dealy for his efforts to befriend operators, and it is to be earnestly hoped that other managers will be as public spirited as he, by throwing open the positions of wire chief to the force under their charge. May Mr. Dealy be spared to many years of health and happiness!

NEW YORK, Dec. 24, 1880.

A. U.

#### Canadian Items.

To the Editor of The Operator:

SIR: The present early session of the Dominion Parliament, which is now drawing to an adjournment for the holidays, has made things pretty lively in the larger Canadian cities for the past few weeks. Exciting debates for and against the proposed scheme for the completion of our railway and telegraph service to the Pacific Coast have furnished plenty of work. Popular excitement has been raised to a very high pitch, and, as meetings are to be held throughout the country for the discussion of this question, it is more than likely that an usually quiet season will find newspaper centers, at least, crowded with business.

The M. T. Co.'s Ottawa "House" office has been handed over to the care of Mr. O. Higman, the main office chief. With an efficient staff, comprising Messrs. Bowers, Gallagher, Grimes, Alexander, McWilliams and Baker, many a hard night's work is done that would make a very favorable showing. The Ottawa main office staff consists of Messrs. McTaggart, St. Jacques, Vanluven, Lynch, Rochon, Venn and Ahearn, and the Misses Baldwin and Morgan. The whole are under the management of Mr. N. W. Bethune, an old and faithful servant of the company, who is also superintendent of the Ottawa district.

The President's late message reached here in good form, and was received on one wire by Messrs. Berry, Perrin and Joe Hurley without a break being recorded against the office. When it is mentioned that the bulk of the sending was performed by Mr. Geo. Burnet, of our Buffalo office, whose reputation for fast work is well established, the showing is all the more creditable to the gentlemen who handled it here.

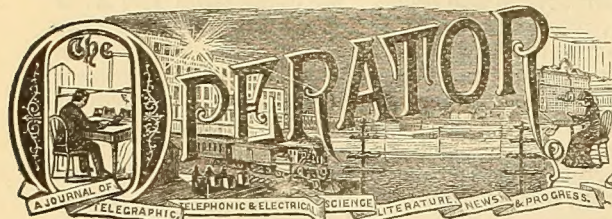
Mr. W. L. Cullen, of the Chicago W. U. force, is spending the holidays with his relatives in this city. His many friends are pleased to see him looking so well. As he is one of the Canadian operators in Chicago who was not bulldozed into forswearing his allegiance to Her Britannic Majesty in the excitement of the late election, his fellow-citizens here will, no doubt, acknowledge his fealty by a suitable testimonial. Miss Fannie McConnell has gone home for a few months' needed rest. Mr. McGill, late of the Dominion office here, has been assigned a position on the day force.

TORONTO.

#### Very Pretty, Readable and Useful.

A very pretty, readable and useful book, bearing the title of "Telegraphic Tales and Telegraphic History," has just been issued by the publishing house of W. J. Johnston, of this city. With telegraphers especially, the book promises to become exceedingly popular, as it contains well-written sketches of many of those humorous and pathetic incidents which paint the sunshine of the operator's life. The general public will find much in "Tales and History" to acquaint them with the inside life of manipulators of the mystic key. It is full of instruction, neatly gotten up, and takes rank with the best of the many Christmas publications already announced.—N. Y. Express.





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### THE COMPLETION OF ANOTHER LUSTRUM.

Five years ago to-day the Western Union Telegraph Company put into force that well-remembered "General Order No. 164," reducing the salaries of its employes. Forgetting that they were inviting their men to a game at which two sides could play, and in spite of the murmurs of discontent, they enacted that ineffably ridiculous burlesque on true economy—the "Sliding Scale"—and thereby forfeited the confidence of men who, full of loyalty for the old concern, had been true to them alike in victory and defeat. There was no apparent excuse for such a reduction. The company was then making large profits, paying a dividend of about ten per cent. per annum, and just entering on the great Centennial year, when business was expected to be usually brisk. No explanation was offered, beyond the simple desire to "reduce expenses" at all hazards. Among all the hardships caused by the cruelly unfair order, we know of one case where, on that dismal New Year's day, a father went home to his wife and dying child—a little girl—bearing his meagre earnings, minus the amount deducted by the sliding scale. The little one overheard the sad story. Soon afterward her feverish lips lisped, "too bad," and she fell asleep—the sleep of death. The four large tears that fell on baby's inanimate form from that father's eyes scored the four dollars snatched from his slender salary—four dollars saved to the company. The triumph in financiering was not unique though, for Death had run the Western Union a close race in the matter of "reducing expenses" in that family.

It is not specially to recount the wrongs of five years ago that we refer to them now, but to show in greater relief the extent of our present prosperity. It was a beautiful custom among the Romans to celebrate, every five years, upon the completion of their census, a Lustration or Purification of the whole Roman people, in which the history of the preceding five years—or lustrum—was reviewed. Oxen, swine and sheep were offered on the Campus Martius; the warrior refought his battles; vestal and priest sang the pæan and dirge, and sighing swains piped their songs of love to blushing maidens. So do we, to point a moral, on this prosperous New Year's day, with charity toward all, look back through the hurry and bustle of the lustrum just completed. It is certainly not too much to say that the first of January, 1876—the date of General Order 164—was the day which first revealed the

crumbling in the foundation of Western Union. When that uncalled-for and cruelly unfair order was promulgated, like the revocation of the edict of Nantes, it drove away many of the company's most faithful and practical men to seek, like the Huguenots of old, a Veii in the wilderness of other professions, where there would be more profit, or at least more fair play. Men who had embarked their whole talent in the business—men who up to that time had been straining nerve and sinew, like race-horses—suddenly drew up with a round turn and prepared, in more ways than one, to resent the attempt to vagabondize them. That great trial brought out the latent strength of their characters; for the sliding scale had necessarily left them the most important part of their stock in trade—Hope and Industry. The old story anent the best laid schemes of mice and men was repeated; those who possessed the hen that laid the golden eggs killed her to get more, and lost all. The apparent prosperity of a great monopoly tempted new rivals to the field; the great *doyen* of the telegraph died—the buried grandeur of William Orton will never be resurrected—and when the pinch came, those who had trusted and served and been deceived, went over, of course, to the enemy's camp.

Fortune has since smiled upon us. To-day we are better off than ever; and so, with all the devotional earnestness and vigor of Olympian idolatry unabated, we celebrate another lustrum.

To the end that no one may be misrepresented, we devote considerable space to-day to the use of a French admirer of the postal telegraph, to enable him to explain as well as he can the faith that is in him. While extending to our Gallic critic assurances of our distinguished consideration, we advise him to continue taking it out in talk, and by no means to stake any of his *louis d'ors* on the adoption of the postal telegraph in America, unless he can get hold of the short end of a tempting bet—say, a couple of million to a dollar. The whole history of THE OPERATOR—from the moment when, as a speck on the telegraphic horizon its enemies tried to crush it by discharging its editor, down to the present time when it spans the telegraphic heavens like a rainbow, shining for all, is bound up in the working operators, and is too well known to call for an answer as to what interest it supports. Recognizing, however, the Frenchman's zeal for the welfare of the profession as being fully equal to our own, and differing only in method, we commend to him a French proverb—and since he cannot "speak well the English," we render it in his mother tongue—in which he will doubtless recognize more readily the genius of his talented countryman Le Brun. It teaches us that, "*Quand on a même but rarement on s'accorde.*" Thus, while we have the same object in view—the welfare of operators, first, last and all the time—we do not expect to agree with all those who have the same aim. Our correspondent is scarcely correct in speaking of the opinions expressed in THE OPERATOR as *our own*. We have no opinions to thrust upon others. We aim, not to lead, but to *reflect* the prevailing sentiment of the mass of our profession; and, in antagonizing a postal telegraph scheme—so long as the present alleged civil service, political tenure of office system and the periodical "election assessments" on the slender salaries of government employes prevail—we know that we are expressing the opinions of a majority of the thoughtful men now employed under the various

companies. If our knowledge-seeking French correspondent wants to know particularly what "a gang of pot-house politicians" is, we respectfully refer him to the well-known cipher-alleys and lightning-calculating bureaus, to be found anywhere he may seek them.

The decision of the Telegraphers' Mutual Benefit Association may have been just right—it was, at all events, the even pound of flesh—to refuse the claim of the widow of the late John G. Boyce, and to thrust her aside while she appealed in trembling anticipation, with her dead husband prostrate by her side. It may have been just, but a man must be as cold-blooded as a fish to deal out "justice" of that kind. The woman's health—if it is not too overwhelmingly sarcastic to call it "health"—is gradually failing under sorrow and bitter disappointment, and we hope that the members of the T. M. B. A. will pay, voluntarily, the claim which has been rejected by a bare majority of their executive committee. If the concern expects to create confidence among telegraphers, it must not, after accepting a risk through its accredited agent, and taking in a duly certified member's regular assessments for 15 months, dispute the matter with the widow and orphan after the strong arm which gave them bread has been swept away. Somebody saved a dollar (his individual assessment) by putting forth a letter showing that Boyce was not in prime condition when he joined the association; all the other members saved a dollar by the action of five out of nine of their executive committee in rejecting the widow's claim, and the decision was apparently indorsed by the operators at large because it was never properly presented to them—a defect which we propose to remedy in due time, now that we have commenced it. We firmly believe that, in a doubtful case, the big heart of the average operator would forbid him to be party to a harsh decision against the memory, and, still more so, against the dependent ones of his dead fellow-laborer. It is better that we should expend a dollar apiece in paying a seemingly bad claim, once in ten years, than that, as in this case, a friendless woman on the verge of her confinement, with an infant still in her arms, should be cast adrift without a penny, and a thousand miles from home or friend.

We regard the decision in the English telephone suit as a correct one technically, reasonable under the circumstances and eminently sound in law. We are unable to see how the Telephone Company, in taking an appeal, can expect the highest court in Great Britain to reverse the decision of the Court of Exchequer. If we ever establish a postal telegraph system here, a similar ruling would soon be necessary to protect it, since some ingenious Yankee would promptly invent a method of transmitting intelligence by means different from those known at the time of the acquisition of the existing telegraphs.

A monopoly can afford to have no quibbling about the word "telegraphs." It must cover all methods of communication or none. Batteries or no batteries, wires or no wires, magnets or no magnets, an intended monopoly *must* adopt the meaning of the word "telegraph" as given by Sir William Thomson, viz.: "The interchange of ideas between two intelligent beings by means of inanimate matter occupying space between them."

If England shall now permit the telephone people to take in, transmit and deliver messages, by means of the telephone, that action would



result in competition fatal, or excessively damaging, to the Government's monopoly, a little whistle for which it paid fifty million dollars.

But the whole business strikes the average free American intellect as the necessary outcome of a Government monopoly. It means that a monopoly must, in its own defense, prevent improvements; that it must immediately confiscate any valuable invention; that inventions must be discountenanced, even if not declared contraband, and that, as in the case of the telephone, when America sends them a good thing it must be put where it will do the least good. All this proves that a Government monopoly can never give to the public the advantages furnished by private enterprise, acting under the spur of two or three lively competitors.

SENATOR MORRILL'S resolution instructing the Committee on Post Offices and Roads to inquire whether or not the telegraphic service of the country should be brought under the control of the Government must be in the nature of a hard task for the committee. The corresponding committee of the House has been struggling with a somewhat similar bill since May last. We hope that both committees will delve down deep into the subject, and give us some reliable account of how much the British public—who for twelve out of every twenty-four hours are telegraphically nearer to New York and Chicago than to any of their own neighboring towns—paid for their new telegraphic whistle, and how they like it. We have also a brotherly word for any possible outside promoter of this scheme. If there be such a man, cherishing the fond hope of a fat job for himself for a term of years out of such a politico-commercial monopoly, we would advise him quietly to exact real-estate security for the payment of his salary after the first election has introduced the "spoils of victory" doctrine into his new scheme.

THIS is the day when all the boys "swear off." Very well; swear off anticipating wealth from any source other than hard and steady work; swear off trying to hoist more sail than you can carry with safety; swear off telling your secrets, even to "bosom friends;" swear off spending all your leisure time in seeking pleasure, and swear off being over-cautious or too backward. If you are possessed of any particular talent, don't hide it under the traditional bushel; be around always when the prizes are being given out; study hard, live within your income; never borrow, make your word as good as your bond; aim to be always five minutes ahead of time; attend to your employer's business as though it were your own personal affair; read THE OPERATOR attentively during the coming year, and profit by what you learn from it; cut this paragraph out and paste it in your hat, and then take notice, this day next year, how little you have to "swear off."

WE suggest to American scientists, in view of the forthcoming exhibition of electricity in Paris, that arrangements be made for a similar exhibition in this country, at an early day, subsequent to the Paris exhibition. America has, long ago, taken the lead in electrical research and invention, and such an exhibition in this city, the metropolis where Morse lived and died, or in Philadelphia, the home and final resting place of the immortal Ben Franklin, would be peculiarly appropriate, and, we believe, profitable. The quadruplex, the telephone, the phonograph, the microphone and the photophone have all been invented, or have come into use, since the Centen-

nial Exhibition, only four years ago, and, with the wonderful possibilities of even the next twelve months, we might say that such an exhibition in America would be not only a patriotic expedient, but an absolute necessity for the proper appreciation of the progress of electrical science.

EVER since the introduction of the telegraph, men have been writing voluminously on electrical subjects, but their efforts have been rather too deep for the ordinary student. The "Notes and Queries" of Mr. T. D. Lockwood, which are now enriching the columns of THE OPERATOR, are written with a special desire to avoid that great stumbling block to the study of electrical science. Mr. Lockwood has stored his own mind with all that it is necessary to know on this subject, and has discovered the secret of imparting his knowledge to others in a way that is proving to be very popular. He can reason from cause to effect, and has breadth of mind, not only to disentangle a lot of knotty questions, but also to present them straight and smooth to his readers. Every operator should read those articles carefully, and seize the opportunity of learning, in an easy way, the most intricate questions connected with our profession.

THE 8th inst. in addition to being the sixty-fifth anniversary of a memorable national victory—the Battle of New Orleans—is also a reminder of the vast importance of the services now rendered to mankind by the electric telegraph. When that great battle was fought the treaty of peace between the United States and England had been signed for two weeks. But there was no ocean cable in December, 1814, to waft the peaceful tidings from Ghent, and so avert a furious battle on our soil in January, 1815. Had there been a telegraph in those days, the hundreds of lives—including that of the gallant Pakenham—which were uselessly sacrificed in the cypress swamps of Louisiana, would have been saved.

THE days of telegraph poles and over-head wires in large cities seem to be rapidly drawing to a close. In New York and Philadelphia, and also some other large cities, great preparations are being made for the laying of underground lines. There was an idea dropped by "S. A.," in the last number of this paper, in connection with this subject, which is worthy of consideration, viz., to establish the main office *outside* of the city limits, and transmit telegrams to and from branch offices in the city by pneumatic tubes; all the relaying to be done at the main office in the suburbs.

THE extreme length of our very full synopsis of telegraphic doings during 1880 will remove any necessity for calling attention to it. It is a most gratifying exhibit of the affairs of the whole telegraphic world, and places America well to the fore in all that pertains to electrical science and progress. We now look forward to another year of activity and prosperity. The most important events already planned for 1881 are the laying of two or more new Atlantic cables and the International Exhibition of Electrical Appliances, to be opened in Paris on the 1st of October, and to remain open until November 15th.

AMONG other good resolutions formed to-day, it would be a prudent thing to resolve to join the Telegraphers' Mutual Benefit Association. The dispute raised in the case of John G. Boyce, after a membership of fifteen consecutive months, is certainly a discouraging precedent; but we believe that, all things considered, the T. M. B. A.

is safer and cheaper than any of the regular insurance companies.

THIS day commences the year 1881, during which, according to the prophecy of Mother Shipton, made some hundreds of years ago, the world is to come to an end. Carriages are now running "without horses;" England has accepted a Jew, and all the other predictions have been fulfilled, save only the couplet which says:

"The world to an end shall come,  
In eighteen hundred and eighty-one."

Still, plans for electric lighting, and the extension of the telegraph by sea and land are being pushed rapidly forward.

Mr. A. F. Hurd, manager of the A. U. office at Buskirk, N. Y., devotes his spare time to printing visiting cards for operators. This is very commendable, and it is hoped that his brother operators throughout the country who need visiting cards, will send him their orders. We have seen the cards, and feel certain that they will prove satisfactory to those who try them. See Mr. Hurd's advertisement in this issue.

WE commend the following to the consideration of the slim array of advocates of an American postal telegraph system. The London Times, in commenting on the decision in the telephone suit, says: "If telephonic communication be suffered to fall under the control of the General Post Office, it will not only be enhanced in cost, but will languish as a scientific discovery."

THE privilege of subscribing to the stock of the proposed two new Atlantic cables expired yesterday, and it is now morally certain that in the course of the next six or seven months the American Union will be working both of them between Penzance and Torbay. The Siemens Brothers have already commenced the work of preparation for their manufacture.

WE are pleased to hear that the American Union Company is disposed to let its rates remain as at present, thus avoiding for the nonce any chance of a war of rates, and contenting itself with the spectacle of the Western Union coming down from its lofty perch to compete for business without the aid of a dummy company.

IT may be a good thing for our fair sisters who admire the electric light to know that under its mild beams the skin will soon show all the symptoms of "sunburn," even in midwinter. Our philosophers now state that the electric light will develop freckles in winter as quickly as the sun will in midsummer.

TO-DAY Mr. Cyrus W. Field eats his New Year's dinner in Hong Kong, China. The telegraphers of America wish Mr. Field many returns of the season, and more so since his presence in China is likely to open a new field for telegraphers, both on land lines and cables.

A MATCH is a small article, but match-making is a vast industry; and it appears as though the electric light is going to ruin it, by practically doing away with the use of matches.

WESTERN UNION stock is quoted at 78½, American Union at 71¼, and A. & P. at 34. Last issue they were 82½, 71¾ and 34, respectively.

SINCE our last issue, General William B. Hazen has been confirmed by the Senate as Chief Signal Officer of the Army.

THE OPERATOR wishes you all a very Happy New Year.



## Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible ;  
Theoretical as far as necessary.

BY T. D. LOCKWOOD.

Q. 74. What is a galvanometer ?

A. A galvanometer is an instrument for detecting, indicating, or measuring currents of electricity.

When used only for detecting and indicating such currents, the instrument is more properly called a galvanoscope. Galvanometers are made in many forms, and are used in several different ways, but are all based on the fundamental fact that a magnetic needle is deflected from its natural position by the passage of a current of electricity in a conductor placed parallel to it. When the conductor is carried over the needle and back on the other side the effect is doubled, and, of course, if we repeat the operation a great many times, using insulated wire, thus forming a coil in which the needle is freely suspended, the effect is multiplied almost indefinitely.

All galvanometers, then, consist of a coil of insulated wire and a magnetic needle delicately suspended, so as to be easily deflected by the passage of a current through the coil. These, with the addition of a dial plate, graduated so that we may intelligently interpret the movements of the needle, are the only essential features of the instrument.

Horizontal galvanometers are more sensitive than vertical ones and are in more general use. In using a galvanometer for any purpose, an instrument of low resistance is the fittest one to use for testing low resistances; and the greater the resistance to be tested the finer should be the wire, the greater the number of convolutions, and, consequently, the higher the resistance of the galvanometer.

Q. 75. When and by whom was the galvanometer invented ?

A. The galvanometer is one of the earliest results of Oersted's discovery. It was, in fact, in the same year (1820) that the first galvanometer was invented by Prof. Johann S. C. Schweigger, of Halle, who passed a number of turns of insulated wire round the compass needle, thus multiplying the galvanic effect and constructing a galvanometer.

An instrument of different form was soon afterward independently devised by Johann C. Poggendorff, of Berlin; and, as a description of this latter was published prior to that of Schweigger, Poggendorff has been thought by some to be the original inventor.

The invention of the galvanometer is the basis of the "needle" system of telegraphy.

Q. 76. What are the principal galvanometers now in use ?

A. The tangent and sine galvanometers, the differential, Thomson's reflecting galvanometer, and those constructed on the Wheatstone Bridge principle, which latter usually comprise also the necessary resistance coils.

Q. 77. What are the principal uses of a galvanometer ?

A. Besides the use implied by the name—i. e. that of detecting and measuring galvanic currents—the galvanometer is invaluable in practical telegraphy, and is employed in the testing and measurement of instruments and circuits for conductivity resistance; and the latter also for insulation resistance. It is also used in the localization of faults on telegraph lines and in cables; in the measurement of internal resistance, and estimation of the electromotive force of batteries; and, in the case of long submarine lines, as a receiving instrument for telegraphic signals.

Q. 78. What is an astatic galvanometer ?

A. It is a peculiar arrangement suggested by Professor Cummings in order to increase the sensibility of the galvanometer.

Two needles are freely suspended on the same axis, parallel to each other, but with their poles placed in contrary directions—the north pole of the upper arc being directly over the south pole of the lower one.

The sensibility of the galvanometer is increased, because the directive force of the earth

is neutralized, since the two needles are opposed to each other. If the needles could be made exactly equal to each other in magnetic power, they would stand indifferently in any position in which they were placed; but, in practice, one needle is always a little stronger than the other, and the pair will, therefore, settle in a north and south direction.

Each needle may have its own coil, the coils being joined so that the current circulates in opposite directions around the two and deflects both needles similarly.

On the same axis with the needles, but above the graduated circle, is a pointer to denote the deflections. The nearer the two needles are to each other, in magnetic strength, the slower will be the vibrations of the pair and the greater the delicacy of the galvanometer.

Two needles so mounted and arranged in coils constitute an astatic galvanometer.

Q. 79. What is a tangent galvanometer, and how is it used ?

A. It is an instrument invented by M. Pouillet, a French electrician. Its principle is that, "The strength of current, as measured by the tangent galvanometer, is proportional to the tangent of the angle of deflection of the needle." It is thought by many electricians to be the most useful and convenient form of galvanometer for general purposes. It consists essentially of coils of wire wound in a deep groove in the circumference of a brass ring, about six inches in diameter, with a small magnetized needle hung at its center, and moving over a graduated circle. The length of the needle must be small compared with the diameter of the coil, in order that the influence of the coil may, as far as possible, be the same at whatever angle to which the needle may be deflected.

A form of this instrument is made in the United States, with the above object specially in view. It was devised by Dr. Bradley, of Jersey City, and is described as follows :

"The needle is composed of several parallel strips of steel, mounted on a ring of aluminium, and trimmed to form a circle.

"By this means, all parts of the needle are subjected to the influence of the coil throughout the entire deflection. Four coils are used, the first about 150 ohms resistance, the second 25 to 30 ohms, the third one or two ohms, and the fourth is a strip of sheet copper, or brass, which is wound two or three times around the needle."

The first coil is used for high resistances, the last for very low resistances, and the other two for medium resistances.

It will do no harm to state here, for the benefit of the student who is no mathematician, that a tangent is a straight line which touches at any one point the circumference of a given circle.

In the case of the tangent galvanometer, the dial of the instrument is the given circle, and the point at which the tangent touches the circle must be the zero point.

The tangent is, therefore, an imaginary line, which must be parallel to the diameter that connects the degree of ninety on one side to the same degree on the other side, and at right angles to the diameter, or line connecting the two zero points. Now, if the needle is deflected by a given current to twenty degrees, a current of double the strength will not deflect the needle a second twenty degrees, but to double the distance measured off on the tangent line.

This instrument is very useful in testing overhead lines, in measuring resistances by substitution of a known for an unknown resistance. It is much used in England, as an instrument for making periodical line tests, and is employed for almost every general purpose in this country. A modification of the tangent galvanometer was constructed by Mr. Gaugain, by suspending the magnet eccentrically at a point in the axis of the coil, distant from the center by half the radius of the coil. It is, however, proved by Clerk Maxwell, that this modification is in reality the reverse of an improvement. The instrument was really improved by Helmholtz, who placed two equal, parallel and vertical coils, one on each side of the needle, each at a distance from it equal to half the common radius. The proper deflection to work with is from 30 to 50 degrees. If a less deflection is used, a small error in reading off makes a large one when worked out; and, if a larger deflection than 50 degrees is used, a large alteration in resistance will produce but little effect on a galvanometer.

Care must be taken, using this instrument, to have the scale in proper position, so that the ends of the pointer stands over the zero points. If the deflection be too low when testing, try one of the other coils, until a proper deflection is found; always taking care to use the coil which most nearly approximates the resistance to be measured.

If one coil gives too high a deflection and the next one too low, vary the battery power. This instrument is generally used with a table of tangents, so that when the needle is deflected to any degree and the result is read off, the tangent of that degree may be ascertained by reference to the table.

Q. 80. What is a sine galvanometer, and how is it used ?

A. A sine galvanometer is one in which the coils are made movable, so as to be capable of revolving on the axis around which the needle turns. A scale graduated with degrees is attached to the coil, so that the angle, through which it is turned can be observed. When the needle is deflected by a current passing through the coil, the coils are turned by hand, following the needle in its deflection; as the coils are turned, the needle diverges still more, but the angle it makes with the coils becomes less and less, until, at length, a point is attained at which the needle remains parallel with the coil.

When this point is reached, the influence of the earth's magnetism exactly balances the deflective force of the current.

The strength of the current that produces the deflection will then be directly proportional to the sine of the angle through which the coil is turned.

The sine of any number of degrees is that part of the diameter of a circle which is included between a line drawn from its center to the zero point of the graduation circle, and another line parallel to the first, cutting the circle at the degree whose sine is required. If a current of known strength then deflects the needle to an angle of thirty degrees, and the current to be compared deflects the needle to an angle of forty-five degrees, the strength of the second current is to the first as the sine of forty-five degrees is to the sine of thirty degrees. The usual practice is to read off the degree and refer to a table of sines for the required sine. In using the sine galvanometer it is necessary to be careful that, if the needle is at zero at starting, it is brought back exactly to zero again. It is a very accurate instrument if properly managed, and is used chiefly for measuring and comparing weak currents.

Q. 81. What is a differential galvanometer, and how is it used ?

A. It is an instrument invented by M. Becquerel. The needle is poised or suspended like that of the sine and tangent galvanometers, but is surrounded by a coil composed of two wires of equal length, size, and conductivity.

The ends of these coils are so connected that a current made to traverse them passes through the two coils in opposite directions, and, therefore, when the current in each coil is equal, the effect of one coil is completely neutralized by that of the other, and the needle is not deflected. If, now, one current be made stronger than the other, the balance will be destroyed and the needle will be moved by the stronger current.

This instrument is used to measure resistances, by comparing them with standard resistance coils. The resistance to be measured is inserted in the circuit with one of the galvanometer coil wires, and the standard resistance in circuit with the other coil wire. The standard resistance is usually inserted by drawing out plugs, or, as it is technically called, "unplugging resistance." We will suppose that a telegraph line is to be measured for conductivity resistance: It is placed in circuit with one of the galvanometer coils, with the effect, of course, of greatly increasing the resistance on that side; and, in consequence, a large proportion of the current returns through the other side, where, as yet, there is only the resistance of the galvanometer coil, the needle being strongly deflected. We then "unplug resistance" from the rheostat on the opposite side to that of the resistance to be measured, until the needle is balanced; and the amount thus unplugged equals the resistance to be measured.

In order that widely differing resistances may be balanced, one coil is provided with shunts,



These, when used, vary the sensibility of the galvanometer, and, by diverting a portion of the current, permit a small resistance on one side to balance a large resistance on the other. For example, if we have a resistance to be measured, and the comparison coils at hand are not large enough to be substituted for the unknown resistance without the use of a shunt, we employ a shunt of, say, one ninety-ninth of the resistance of the galvanometer coil. The current passing through that coil will then be one-hundredth of the original current, because the ninety-nine hundredths pass through the lesser resistance of the shunt. Now, as the current passing through the coil is but one-hundredth part of the entire current, which, if unshunted, would pass through it, it follows that the resistance which must be unplugged to balance the unknown resistance will actually be but one-hundredth part of the resistance required.

After using the shunt of one ninety-ninth, then, we will suppose that, to balance the needle, we have to unplug five hundred ohms; which is, as stated above, just one hundredth part of the true unknown resistance.

All we then have to do is to multiply the five hundred by one hundred and the result is equal to the unknown resistance; that is, fifty thousand ohms.

It is particularly important that each coil should be perfectly insulated from the other; as imperfect insulation is the worst defect a galvanometer of this class can have.

Q. 82. Describe Thomson's reflecting galvanometer.

A. Thomson's reflecting galvanometer is the most sensitive instrument in use, and is almost invariably employed when very high resistances have to be measured, and also when great accuracy is required. Its principle is that of delicately suspending a very light and small magnetic needle within a coil consisting of the greatest possible number of turns of wire, and of magnifying the movements of the needle so surrounded by a beam of light, reflected from a small mirror fixed to the needle, on a graduated scale about three feet away.

As usually made it has two circular coils, one over the other, which completely surround the needles; so that, no matter what angles they are deflected to, they are always under the influence of the coils. The instrument is generally made astatic, and the two needles are connected one with the other by an aluminium wire. Its base is usually made of ebonite, and is provided with spirit levels at right angles to each other, so that the whole instrument can be set accurately level by means of leveling screws.

On the base are two brass pillars, between which are hung the coils, in a brass case, but wound on bobbins of non-conducting material. The magnetic needles are very small, usually not more than three-eighths of an inch long, and to the one in the top coil is fixed a very small mirror. The two needles and the mirror are suspended by a silk fiber to a stud, which can be raised or lowered by a screw. The beam of light before mentioned is thrown from a lamp placed behind a screen, and falls on the mirror, which is slightly inclined, so as to reflect on a graduated scale, placed immediately above the point where the beam leaves the lamp. This scale is a straight and flat surface, and is generally marked with 360 divisions on each side of the zero point.

A glass shade is placed over the coils, and from the center of its tops a brass rod rises. A short, brass tube slides on the rod, and carries a weak bar magnet, slightly curved, which is fixed at right angles to the rod.

This magnet can be slid up or down or twisted around, and the sensitiveness of the needle thereby increased or diminished.

By turning the bar magnet so that its north pole points to the north, it will act on the needle with a magnetism opposing that of the earth, and tend to turn the needles around. By sliding the bar gradually down a point is reached where the earth's magnetism is just counter-acted. When this point is arrived at the needle will stand at any position. The regulating magnet is then raised about an inch higher than the neutralizing position, when the earth's magnetism will be just sufficient to keep the needles north and south. They are, therefore, very sensitive to any external force, and move when a very weak current passes through the coils.

In using this instrument no iron must be near it, and the testing operator should remove any keys or knives from his person, as so sensitive an instrument is often affected by such things.

These instruments, when intended to measure large resistances, are often wound with German silver wire, and their own resistance is sometimes as high as fifty thousand ohms. Such an instrument will give, with one cell of Daniell's battery, a deflection of two hundred divisions when measuring an outside resistance of ten million ohms.

The reflecting galvanometer, besides being used for delicate measurements and high resistances, is much employed as a receiving instrument for telegraphic signals sent through long submarine cables. A modification known as "Thomson's Marine Galvanometer," is used on ships laying cables, as a testing instrument, and for similar purposes. It is so arranged as not to be affected by the oscillations of the vessel, the fiber carrying the needle being attached to both top and bottom of the frame in which it is suspended.

#### Government Monopoly vs. Private Enterprise.

To the Editor of The Operator :

SIR: By watching from my lodgings the pretty cottage opposite, where a gentleman had much instructed me by teaching to his little girls the game of croquet, I came by degrees to know him, and through his kindness I have for some years read regularly THE OPERATOR. I do not speak well the English, nor yet can I fluently express by that tongue what I would wish to say in writing. This I much regret, especially as I seek to quarrel with the sentiments contained on your editorial page in the number for Dec. 1. I know well the difficulties to be encountered in an attempt to refute in its own columns a journal's editorial utterances; but, as you English-speaking people put it, "a cat may look at a king."

Therefore I will not silent be.

My understanding is that THE OPERATOR is conducted in the interest of operators. Am I right? I conceive it to be no part of your policy to pander to the selfish motives of corporations. Again I ask if I am accurate? I fancy you say "yes;" and I will proceed, *s'il vous plait*.

To me, a Frenchman, whose life has been so passed as to make him *au fait* on telegraphic subjects, both in Europe and America, your points in reference to the Government telegraph project do not seem to be well taken, and your logic appears not genuine. Much that Postmaster James is reported to have said of the capacity of "a little cheap wire stretched through the air" is very amusing, and the statement that "girls and women could do most of the work at moderate salaries" is likewise very absurd. Sarah Siddons was a great actress, and Mrs. Scott-Siddons is one of her lineal descendants, but the latter is not her grandmother. So with these extracts from the Cincinnati *Enquirer*. We have no proof that Colonel James said anything of the kind. They are put forth as his views, it is true, but by whom? By that imaginative scribe "Gath." Postmaster James is ever sensible and practical. If men were rated by medical examiners by the report Gath makes of their utterances, your beautiful country would have more asylums for the victims of lunacy than it has of public buildings.

In citing events and figures when making your comparisons between telegraphy as performed in England and on this side of the Atlantic, you seem to me to be very unfair. Many important offices in the United States are closed at an hour too early for public convenience, the same as is the case in England, and I believe the tendency to close early, equip offices with inferior people and make them as insufficient as possible by grinding them down by a starvation equivalent for their services, is much greater under the administration of private corporations having large bulks of watered stock on the market, the interest on which must be paid to avert the dire dilemma of bankruptcy, than when the control of telegraphs is permanently vested in the hands of the Government.

As to the increase of lines in the United States

by private enterprise in comparison with the extensions in England under Government control, I shall hold that this is a new country to which the peoples of all nations are ever flocking. Is it not natural, I ask, that business here should increase faster than in a long-settled country, and thus make necessary the erection of more miles of new lines? Moreover, your great cities are wide apart, and the comparison for that reason is not comprehensive. As well say Texas is a more thriving state than Massachusetts because it requires eight times as many miles of wire to connect Sherman with Brownsville as it does to connect Boston with Worcester.

Let me now ask: Is not your logic artificial?

I do not understand your reference to "a gang of pot-house politicians," and my sincere inquiries have not developed any knowledge as to who constitutes this disastrous element, which is to appear in Washington as a "delegation" to urge the removal of the manager at New York. Has the Postmaster at New York, at Boston, at Baltimore, Philadelphia, Buffalo, Chicago, New Orleans, San Francisco, or elsewhere ever been injured by these potentates?

The idea is absurd.

It has been my good fortune in the United States, as it was on the Continent and in England, to meet many government officials. I suppose that Postmaster James you know. Is he not a gentleman of education and culture? Is he not a fluent speaker, a correct writer and a valuable member of the community in which he resides? If you know him at all, it is as I describe him that you have him known. The managers of the New York telegraph offices, I have not the knowledge of them personally. They may be the peers of Colonel James, but they are not his superiors. I have heard it related that some of them are men having neither education nor culture. Perchance they are not even fluent speakers, correct writers or especial ornaments to society. This also has been intimated. Let us stick a pin here.

Colonel James is one of many gentlemen appointed by the Government to fill important positions, and the "gang" of which you speak have not him disturbed. Does it not then naturally follow that the telegraph managers, would be equally free from political domination, if they were gentlemen and were capable of filling—not disgracing—the offices to which they were appointed?

My friend by whose copy of THE OPERATOR I enrich my little store of information, tells me that the telegraph superintendents and managers in some cases are selected by the corporations because of their porcine tendencies and brutish instincts. He represents that these men's tenure of office depends somewhat on the degree of meanness of which they are capable, and that their aids are occasionally selected with a special view to an absence of the milk of human kindness in their composition. He contends that but few of the hundreds of men who have won high positions outside of the telegraphic circle were ever anything while they were in it. Their good qualities, intelligence and breadth of mind, which have since led them up to ultimate success in other branches of life, created them unpopular, he says, with the telegraph managers, and that in many cases they quit the service because of the petty persecutions to which they were subjected, and on account of the hopeless outlook for men of their character and ability if they remained. He would have me believe that many operators yet in the ranks are at the mercy of a class of men incapable of generous impulses, who obtained their positions because they were sycophants and who retain them by perpetuating a system of espionage upon those beneath them, which is repugnant to all self-respecting men the world over. This, then, if my friend speaks truly, is the result of more than thirty years of telegraphic management by the private corporations!

Is it not monstrous?

If THE OPERATOR is the champion of telegraphers, let it not preach down Government telegraphy. Under ordinary conditions better men are chosen for public trusts than are selected to administer the affairs of telegraph companies. The press, powerless to influence the management of a private business, sees to it that public officers do not disgrace their country with impunity; and these officers, always under the eye of the press, choose their assistants with some



regard for their character as men. In other words, manhood is not at a discount in the Government service. It is very far below par in the eyes of private corporations, if half we hear is true. Again, Government employes possessing the requisite natural ability and the acquired accomplishments necessary to make a first-class telegrapher, are better paid, more considerately treated and are more securely entrenched in their positions than are the operators with the corporations. Let us have the Government telegraph by all means, if for no other reasons than that it removes the insurmountable wall which now confronts every operator when his salary has reached the neighborhood of \$100 per month, and because it opens to men worthier of better work an illimitable field in which they may hope for promotion according to their deserts and the measure of their capabilities, while relieving them simultaneously from the tyranny of men officially greater, but naturally inferior, who perpetuate their reign of power under the existing régime by aiding in crushing the pride and spirit out of weak men, and in driving out of the business the strong characters which admit not of being molded until they become automatons to do the disgraceful bidding of those having superior official elevation.

*Au revoir,*

VICTOR DU SAULD.

CAMBRIDGE, Mass., Dec. 12, 1880.

#### Organization of an Electrical Association at Albany, N. Y.

*To the Editor of The Operator:*

Sir: The city of Albany needed an Electrical Association. Its three telegraph companies, its two telephone exchanges, its two railroad telegraphs, its Medical college and the science departments of its three great schools—the High school, the Normal school and the Academy—presented a body of men of exactly the variety required to make such an association both a success and a necessity. For there were the men brim full of the theories of electrical phenomena, and acquainted with the mathematics of the subject, and others to whom the applications of electricity were perfectly familiar; and these men needed a common standing ground where they might interchange views, and each, out of his special knowledge, supplement that of the others. Then there were those who required instruction on all points; operators whose long business hours precluded study of principles, and amateurs whose energies required direction. These men needed the advantages of an electrical association to make good their deficiencies.

Thus the ground was prepared and the material in abundance at hand, and at length a builder appeared to put this material together and form a useful structure. This builder was Mr. Ira S. Kinch, Supt. of the N. Y. C. R.R. Telegraph. He drew up a call which was willingly signed by nearly all of the prominent telegraph and telephone men and scientists of the city, and published in the daily papers. The result was that two days later, on Wednesday evening, Dec. 15, about one hundred and fifty gentlemen met in the Common Council Chamber and proceeded to organize the Electrical Association of Albany.

The meeting was called to order by Richard Prescott, Professor of Natural Science in the High School, who, in a brief address, explained the objects of the meeting and the proposed association. Geo. S. Weaver, a prominent citizen and enthusiastic amateur electrician, was chosen chairman. A committee appointed to prepare a plan of organization and nominate officers made a report, which was adopted, electing the following officers: President, Geo. S. Weaver; 1st Vice do., James H. Rugg; Manager W. U.; 2d Vice do., Andrew B. Uline, General Manager Commercial Telephone Co.; 3d Vice do., C. H. Parr, Manager American Union; 4th Vice do., A. F. Onderdonk; Treasurer, Chas. E. Jones, M. D.; Rec. Sec., Supt. Ira S. Kinch; Cor. Sec., Jos. S. St. John, Prof. Sciences State Normal School, and an Executive Committee consisting of the President, Treasurer and Recording Secretary *ex officio*, and Wm. J. Cull, Supt. Fire Alarm Telegraph; C. H. Sewall, Manager A. & P., J. S.

Mosher, M. D.; Prof. Richard Prescott and Warren S. Dow.

A great deal of enthusiasm is manifested in the undertaking, and there is every reason to believe that a highly successful career is in store for the Albany Electrical Association. P.

ALBANY, N. Y., Dec. 25, 1880.

#### New and Interesting Stories.

“Telegraphic literature of the popular sort has nearly always been very scrappy and very dull, the same old stories being made to do service over and over again. It is gratifying, therefore, to find that Mr. Johnston, in his new book, ‘Telegraphic Tales and Telegraphic History,’ has introduced his readers to a number of new and interesting stories about operators and the public, if we cannot precisely defend the historical and scientific portions of the book from the charge of scrappiness. ‘Telegraphic Tales’ will be popular among operators, and the general reader will find a good deal of instructive and amusing matter in the book.”—*N. Y. World*.

#### The Telephone in Colorado.

*To the Editor of The Operator:*

SIR: There are throughout this State thirteen telephone exchanges, controlled by the Colorado Telephone Company, Mr. F. O. Vaille, Manager. There is also an exchange at Leadville, controlled by other parties, about which I know very little. Among our exchanges, I think, you will be able to find one or more even smaller than Ayer, Mass. We are doing a very prosperous business, and I think we have more telephone in use throughout the State, according to population, than any other State in the Union. We have trunk lines connecting Golden City, Central City, Black Hawk, Nevada, Idaho Springs, Georgetown, and Silver Plume. The latter place is about fifty-five miles from Denver. It is the longest line we have and works very well, indeed. We have undoubtedly the most difficult territory in the United States in which to work long lines, on account of the altitude and superabundance of atmospheric electricity. I understand that an experiment at telephonic communication between Denver and Leadville was once tried, but with unsatisfactory results, the induction (so called) being so great as to make communication unintelligible.

We have local systems (not connected, however, by trunk lines with Denver) at Colorado Springs and Manitou, Pueblo, Silver Cliff and Rosita. Manitou, as you are doubtless aware, is situated at the base of Pike’s Peak and in the immediate vicinity of some of the grandest scenery in the world.

It has recently been discovered by ye enterprising reporter of the *Colorado Springs Gazette*, aided by the fervid Irish imagination of Sergeant O’Keefe (in charge of the Signal Station on Pike’s Peak) that a living volcano now inhabits that unhappy mountain, and it may be that future generations will discover under a depth of lava the telephone used by General Grant on his recent visit.

The exchange at Pueblo is in a prosperous and growing condition, Pueblo being situated at the junction of the Atchison, Topeka and Santa Fe and the Denver & Rio Grande Railroads, and destined ere long to be the great distributing depot for a vast population which will soon fill the great mineral region in Southern and South-western Colorado. When the exchanges at Silver Cliff and Rosita (connected by a trunk line, seven miles long) were established early last spring, Silver Cliff was a city of shanties, but recent discoveries have given it another “boom,” and now its people are soon to be blessed with a railroad, water-works, and other modern improvements. The celebrated Bassick and Bull-Domingo mines are connected by telephone with the exchange.

The coming Spring will probably see the bold telephone man stretching his lines between the mining camps of the wonderful San Juan regions, and possibly he may seek to impress upon the mind of the benighted but warlike Ute the great advantages which may follow the leasing of a telephone.

The wonderful discoveries of mineral wealth

in this State during the past few years make it more than possible that the Colorado Telephone Company may be called upon to construct an exchange for the use of four or five hundred subscribers in some city as yet unborn. S.

DENVER, Col., Dec. 11, 1880.

#### Written in Entertaining Style.

A very entertaining book, whether for the professional or the general reader, is “Telegraphic Tales and Telegraphic History,” written and published by W. J. Johnston, editor of *THE OPERATOR*, New York. Mr. Johnston relates the whole history of the telegraph, gives a number of amusing anecdotes connected with its use, and explains its use in connection with the Signal Service, the railroad systems and other outgrowths of its usefulness. He writes in entertaining style, and never suffers the reader’s interest to flag over a dull page.—*Philadelphia Inquirer*.

#### Pacific Coast Notes.

*To the Editor of The Operator:*

SIR: Nothing startling has occurred in this portion of the telegraphic world lately. There have been a few changes made in the Division, one or two transfers of operators between small offices and a change of managers at Sacramento. Upon reflection, it occurs to us that there is something *startling* about the change last mentioned. It will be remembered that Mr. Allen (late manager at Sacramento) was the cause of getting the Western Union into quite an interesting law suit nearly two years ago, by discharging Mr. Williams, an operator, against whom he entertained a personal grudge. Mr. Williams sent a paid telegram, in protest, to Superintendent Gamble, and claimed that it was suppressed by Mr. Allen. Out of this he made a case against the company, which has been on trial two or three times in different courts, but which at present bears the appearance of having been compromised. Shortly after this occurred the retirement of Mr. Allen into the obscurity of private life was talked of by the officials and confidently expected by employes of the company, but an invisible, although surmisable, influence retained the gentleman in a position out of which, under similar circumstances, any operator unpossessed of the same power over prominent officials, would have been ejected with unceremonious celerity. So the fact that he has finally been ousted is just a little bit surprising. To say that Mr. Allen was very unpopular with the telegraphic fraternity, is putting the case mildly. Mr. Beardslee is now manager of the Western Union office at Sacramento. As it is a position of some importance and desirability, there was quite a contest for the place among two or three other faithful employes of the company, and the gentleman who was successful in getting it. Mr. Beardslee has only been upon the coast a short time, and his promotion in preference to other men who have grown up with the business here has, naturally enough, caused a little grumbling as to the eternal fitness of affairs in general, and the uncertainty of a monopoly’s gratitude in particular.

We are encouraged, however, by the assurance that “Virtue is its own reward,” and by that alone, for we are morally certain that it will never be rewarded by the non-appreciative official at the head of the Pacific Division of the Western Union Telegraph Company.

A number of instances have occurred in which positions a little more desirable than the general average have been filled by men imported from the East. In fact, this practice of ignoring the claims of home operators has been one of the unwritten rules of the company here. Is it true that operators resemble prophets, in not being “without honor save in their own country?”

We would not be understood as reflecting upon the strangers who have come here and filled these positions—they are gentlemen worthy and competent, though no more worthy or more competent than the old employes of the company here. Neither do we deny the right of em-



ployers to employ whomsoever they choose and ignore the claims of old employés at their own sweet will. We simply mention the matter as an item of interest to the poor misguided sinners who are so stubbornly wrong-headed as to imagine that the company they work for will some day reward them for their stupid, persevering industry.

"CALIFORNIAN."

Dec. 15.

#### Cleveland Chronicles.

To the Editor of The Operator:

SIR: Recovering from a season's illness awakens us to a realization of what a boon health is, even as a few days of storm makes us better appreciate the sunshine. We proceed to thank our worthy editor for the sympathy expressed for us in the columns of THE OPERATOR, and in the fullness of our joy we greet all of our friends and wish for everybody a merry Christmas and a happy New Year, which the Cleveland shop windows proclaim to be in the near future.

Business is rather light with us at present though good for this season of the year. The manner of abbreviating the words "household goods" into "h. h. goods" is no longer in vogue, as a serious detriment to the former manner of transmitting them has been found in the fact that business is light and consequently the boys are vigilant in detecting the call of "H." No sooner does the sender start off with "h h goods" than a Cleveland operator breaks in with "ii H." It is provoking to railroad operators, but we are bound to get our work in. The American Union is doing a fair percentage of the business here, and has as fine a corps of operators as ever graced an office.

The changes occurring in the Western Union office here since our last letter may be summed up as follows: On account of sickness in the family of Mr. J. T. Hanford, Mr. G. W. Pattee son has taken the all night job, Mr. Hanford doing day duty. Mr. A. D. Campbell has resigned to accept a more lucrative position with the American Union at Toledo, Ohio. Mr. W. W. Cummings, late of Rixford, Pa., but formerly of Cleveland, succeeding him. Mr. Cummings looks well and we welcome him back to our ranks. Messrs. T. E. Now and H. W. Jeffers have each been granted a leave of absence for a season's rest and recreation. Mr. J. Corrigan has been transferred from day to night duty, Mr. Fred Craig, Jr., from Cincinnati quad to New York Circuit and Mr. P. C. Greenwell from New York quad to New York Press Circuit. We miss our worthy friend Mr. Bob Risdon, from the Detroit end of Cleveland duplex, and regret it exceedingly, as we now have to struggle with students, though there are good men in Detroit.

The excellent make up of THE OPERATOR has won for it a circulation in this vicinity such as no other professional paper ever enjoyed. In your last issue we notice a communication from Indianapolis, the author of which we think we recognize as our old friend, formerly of Columbus; at any rate we venture to say "halloo, 'Sm!'"

I. DUNNO.

CLEVELAND, O., Dec. 20, 1880.

#### Items from Michigan.

To the Editor of The Operator:

SIR: The "Beautiful Snow" is all over us here, and measures about twelve inches. The wires are working strong and business is good.

Mr. F. H. Tubbs, Supt., American Union Telegraph Co., from Chicago, was here recently interviewing the G. R. & I. people relative to a contract for an interchange of business at crossing points, viz.: Sturgis, Mich., Avilla and Fort Wayne, Ind.

Mr. A. W. Gillette has just returned from Chicago, where he has been visiting. He has been promoted and is now chief operator in the general office. He is assisted by Mr. W. A. McGovern, from Reed City, Mich. Mr. Chas. E. Russel, for the past three years with this company, in Grand Rapids, has "cleaned his hooks" and "closed his key" for a while. Charley has gained many friends, socially, among the officials and his fellow employés. He is a good telegrapher, and his "O. K. R." is always ready. When leaving, some of the boys said: "Charley, does your mother know you're route?" to which he promptly replied, "Yes,

Bobs to Muskegon," where, by-the-way, he goes to open a "bucket shop," exchange and broker's office. It is hoped that he will make his fortune and come back to the circuit again soon.

The G. R. & I. and A. & P. Telegraph office, Canal street, is being repaired and changed into one of the handsomest offices in the country. When any of the fraternity are in the Valley City they will be paid by visiting "Ks." Mr. Fitzgerald is manager still, and is assisted by Messrs. Harrigan and Hann, who will be glad to show the boys the—lines.

The Telephone Exchange now has about 185 instruments in working order. The electric light is making quite a blaze here. Fourteen business houses and two of the principal hotels are lighted with it.

GRAND RAPIDS, Mich., Dec. 4, 1880.

#### Milwaukee Melange.

To the Editor of The Operator:

SIR: The marriage boom among the Northwestern operators continues. This week we have the pleasure of announcing two noteworthy events, the marriages of Mr. G. W. Anderson, well known in Western telegraphic circles, to the lovely and accomplished daughter of ex-Senator Spencer, of Arkansas, temporarily residing in the city, and of Mr. J. M. Marlet, a member of the force for some months, and formerly hailing from that noted starting place for operators, Canada, with a charming belle of that northern clime. The Milwaukee end of THE OPERATOR extends congratulations, coupled with the hope that their wedded lives may be strewn with flowers of contentment and prosperity, and as much happiness as is consistent with our poor humanity, but enough of sorrow to add the more to their pleasures.

Octopus has been warned that the manager of the C. & M. telegraph is clamoring for gore and is contemplating some flank movement, just what is as yet undeveloped; but, in the face of such knowledge, we deem it proper to state that our information as regards the plug question was from a reliable source, and we are not to be frightened by threats from showing up all such factories and everything else that may exercise a derogatory influence upon the profession.

There is some talk of a telegraphers' ball, and really we can see no reason why it might not be a great success. Start the ball rolling. How would the middle or last of January do?

Mr. E. E. Brady, night report man on the N. W. side, is at home for the holidays. "Td., of Kansas City," takes his place. A. J. Long has returned from "Bosting." The statue of Commerce has arrived and been placed in position on the new Chamber building. It is as handsome as a Turk, which it greatly resembles. OCTOPUS.

#### Boston Notes.

To the Editor of The Operator:

SIR: As each publication day draws near THE OPERATOR is eagerly looked for, and its semi-monthly advent denotes a pleasurable epoch in our plodding office life.

Not many changes are taking place just now. In fact, not any since the cessation of the Summer business. With the ending of the Summer travel, business fell off very largely, but so many operators resigned and engaged elsewhere that no decrease of the force was necessary. Mr. Harvey Wheeler was the last to leave, on account of small salary and the high price of bananas. While business has fallen off at the main office, it has largely increased at the Old State House, the largest branch city office. Near it are also the American Union and American Rapid offices, and all claim to be doing an immense business. Many firms have tried the Rapid and A. U., but they generally return to the old reliable, feeling satisfied now that their wants cannot be better served than by that company. With the reduced tariffs there will undoubtedly be lively times in telegraphic circles before long.

Boston continues to be the most attractive city in the Union, and in a walk up Washington, Tremont, and Winter streets, and Temple Place, through Jordan, Marsh & Co.'s, and R. H. White & Co.'s, more attractive and elegantly appareled ladies may be seen than in any other city in America. I say ladies—the men are very scarce. They appear to have taken Horace

Greeley's advice and gone West. You see but few men, but the streets are packed with the other element. Boston appears to be a woman town, for you see nothing but women—women and more women.

MORE ANON.

BOSTON, Dec. 17, 1880.

#### TELEPHONE DEPARTMENT.

To-day the telephones keep their usual halloo-day.

The English Government has Boycotted the telephone.

The Lewiston, Me., exchange commenced business June 1st, and now has about 100 subscribers. Mr. J. D. Stanford is the manager.

The decision in the English telephone case, which will be found in another column, makes interesting reading for the telephone people.

President Phillips, of the Niagara Telephone Convention, now holds a responsible position with the American Bell Telephone Co., at Boston.

The employés of the Metropolitan Telephone and Telegraph Company of this city have organized themselves into a society, and will give their first annual reception on the 6th inst., at Tammany Hall.

Mr. F. Overbaugh, the genial manager of the New York Metropolitan Telephone and Telegraph Company, has been presented with an elegant gold-headed cane, by the employés, as a token of esteem upon his leaving the employ of the company.

Our Lowell correspondent writes that the officers of the American Bell Telephone Co., and their employés, are the most genial, honorable and gentlemanly set of men that a person could come in contact with. Their dealings with their licensees are fair and strictly impartial. General Manager Vail and Superintendent of Agencies Madden come in for especial praise.

On the 16th ult., the Connecticut Telephone Company made connection with the Springfield Telephone Company, comprising Springfield, Holyoke, Chicopee, Chicopee Falls, South Hadley Falls, Indian Orchard, Ludlow and North Wilbraham, as well as a through connection with Westfield, Northampton, Worcester and Boston. Subscribers will be charged 20 cents for a connection to Springfield, 35 cents to the offices of the Western Massachusetts Company, 55 cents to Worcester, and 70 cents to Boston.

Nature says that an electric cable manufacturing firm in Neuchâtel have made a highly important discovery in practical telegraphy. After a long and expensive series of experiments, they have succeeded in devising a method of laying cables whereby the induction of the electric current from one wire to another, although the wires are in juxtaposition, is prevented. This discovery, of which no details are yet given, removes, it is asserted, the last obstacle in the way of the widest possible extension of facilities for telephonic communication.

The Manchester, N. H., Union tells the following telephone story: Yesterday a call was received at the central station from Mr. E. M. Slayton's residence, and on the return inquiry from the station as to who was wanted, Mr. Slayton's little girl, a tot about four or five years, hailed: "Connect Mr. Slayton's house with Santa Claus." "What?" said the central operator. "Is this Santa Claus?" came over the magic wire. "No; this is the central office," was sent back. "Hasn't Santa Claus got a telephone?" was the anxious inquiry from the little telephoner. "No; his isn't put in yet." "All right; good-by," was the final response, coming in a very disappointed tone of voice, and the scene closes.

The Supreme Court of Columbus, Ohio, has issued a peremptory writ of mandamus against the Bell Telephone Company and the Columbus Telephone Exchange, compelling the latter to place telephones in the office of the American Union Telegraph Company, notwithstanding the existing contract between the Bell Telephone Company and the Western Union Telegraph Company to the effect that the telephone company shall not connect any of its offices "with any other telegraph company's office or lines," and that "no other telegraph company shall be permitted to become a subscriber." The theory of the court's ruling was that the tele-



phone company is a common carrier, and cannot discriminate against any corporations or class of persons, and that the clauses of contract referred to above are void.

Lowell, Mass., is connected by telephone with over 100 cities and towns in the States of Massachusetts, New Hampshire and Rhode Island. The longest circuit is from Springfield, Mass., via Worcester, Fitchburg, Lowell, Lawrence, to Exeter, N. H., over 150 miles, which is worked successfully. The telephone business between Boston and Lowell, a distance of 26 miles, amounts to \$3,000 annually. The Lowell District Telephone Company, which owns and operates the systems of Worcester, Lowell and Fitchburg, and the lines of the Northern Massachusetts Telephone Company use over 2,500 telephones, and pay the American Bell Company a monthly royalty of over \$1,200. The company controls over 1,500 miles of wire and employs in all divisions about twenty-five ladies and seventy-five men and boys.

Another phase of the telegraph war has been developed in Harrisburg, Pennsylvania. The American Union recently made application in that city to the Bell Telephone Company—which, as is well known, has a special contract with the Western Union—for telephones for American Union offices “at such rates and with such facilities as are enjoyed by other subscribers.” The Bell Company offered telephones to the American Union, provided the latter would sign the usual contract, declaring that the telephone shall not be used for “any toll or consideration to be paid for by any other person than the subscriber, nor for performing any part of the work of collecting, transmitting or delivering any message in respect of which any toll is to be paid to any other party than the Exchange.” As this was just the use to which the American Union desired to put the telephone, that company refused to sign the contract, was accordingly refused the right of renting a telephone, and then brought suit. On the 13th ultimo, Judge Pearson granted an alternative mandamus on the Telephone Company, returnable on December 27, compelling the manager to give reasons why he refuses the American Union telephonic facilities in that city. On the 27th ult., argument was resumed before Judge Pearson, at Harrisburg, but was, by agreement of counsel, postponed until January 5.

## DASHES HERE AND THERE.

The W. U. telegraph messengers of Boston were given a splendid dinner by the merchants of that city on Christmas day.

It is again proposed to introduce a bill in Congress separating the Weather Bureau from the Signal Service of the U. S. Army.

The messenger boys of the Providence, R. I., A. U. office presented Manager Sheehan with a handsome cane as a Christmas present.

The sixth annual re-union of the D., L. and W. R.R. operators was held at Warren House, Hackettstown, N. J., on Christmas Eve.

It was announced, on the 16th ult., that the French Atlantic cable, broken in November last, had been repaired and was again working.

The Saratoga Rifle Club fired a match by telegraph with the club at South Gardner, Mass., Dec. 31. The distance was 200 yards, and the shooting off-hand.

The Weston electric light has been placed in the silver-ware store of R. Strickland & Co., Albany, N. Y., and they have become agents for its sale in that city.

On Nov. 3, 4 and 5, the San Francisco W. U. office handled no fewer than 11,369 messages, and 246,554 words of report—an average of 24½ messages per operator for each hour on duty.

“There is no doubt a class of politicians who, seeing in the adoption of postal telegraphy an opportunity to increase their patronage, would favor it. The sober sense of the country will, however, be solidly opposed to it.”—*Illustrated Scientific News*.

A patent for a new blacking compound has been granted to Mr. Geo. E. Millar, Manager of the Austin, Nev., W. U. office. The principal ingredient of the compound—which is called Millar's Patent Electric Waterproof Polish—is obtained from a common telegraph battery.

On the 14th of December, the Senate adopted a resolution, offered by Mr. Morrill, directing the Committee on Post Offices and Roads to inquire whether or not the existing telegraphic lines interfere with the business of the Post-office Department, and whether telegraphic service should not be placed exclusively in the hands of the general government.

The Mutual Union Telegraph Company of New York placed on record at Washington, Dec. 27, a mortgage for \$350,000 to the Central Trust Company of New York, to secure 350 bonds of \$1,000 each, issued on the telegraph line now being constructed from Washington, D. C., by way of and through Baltimore, Philadelphia, New York City and Providence, R. I., to Boston.

Mr. Geo. Otis, of Provincetown, Mass., writes to say that he takes students from purely philanthropic motives, but does not explain why, if his desire be only to benefit his fellow-man, he should make a charge of even ten cents a lesson. These “philanthropists” do not seem to consider that the overcrowding of the ranks has its effect upon the salaries of all now engaged at the business.

The telegraph cable manufactory of Manly & Sons, Philadelphia, was burned on the 14th ultimo, entailing a loss of \$15,000. The company was engaged in manufacturing a new underground cable which was to have been laid along Chestnut street. Six miles of this cable had been completed when the fire broke out and destroyed five miles of it, one mile being rescued in pretty good condition.

At the last day's session of the National Board or Trade, at Washington, Dec. 17, the first question brought before the Board was a resolution declaring “that the results of the operation of the telegraph in Great Britain as a part of the postal system of the country are such as to commend the adoption of a similar system to the people of the United States.” This resolution elicited a long and interesting debate, but it was finally adopted by the required two-thirds majority vote.

In the suit of the Western Union Telegraph Company against the American Union Telegraph Company, concerning an infringement of what the plaintiff company claims as its right in the Page patent, the Court has, on motion of the defendant company, appointed a commission to take testimony of persons residing in London, Paris, Vienna, and Berlin, by the evidence of whom they propose showing the existence and operation of the devices covered by the Page patent in Europe at a time prior to Page's invention.

Norvin Green, Tracy R. Edson, James H. Banker, T. A. Edison and others have filed, at Albany, articles of incorporation as the Electric Illuminating Company of New York, with a capital of \$1,000,000. The Franklin Electric Light Company of New York City filed articles of incorporation on the 23d ult., with a capital of \$600,000. A preliminary certificate of incorporation of the Edison Electric Light Company of Europe (Limited), with a capital of \$2,000,000, was filed with the Secretary of State on the same day. The certificate of incorporation of the Long Island Electric Light Company was filed on the 20th ult., in the office of the County Clerk of Kings County. The amount of capital stock is \$300,000, divided up in 3,000 shares.

## NEW YORK CITY ITEMS.

### Echoes from 195.

Mr. Jos. E. Fenn has resigned his position of assistant electrician with the A. U. Telegraph Company, and accepted a situation in the electrician's department of the W. U. He has also sold all his patents to the latter company. Mr. Fenn's departure from the American Union will be regretted by the well-wishers of the new company.

Mr. Henry Hoyt, the newly-appointed wire chief of the Eastern division, belongs to a telegraphic family, one of his brothers being an ex-supt. of the Western Union, and another the present Manager of the Halifax, N. S., office. Mr. Hoyt has earned his shoulder-straps through long and meritorious service, his career being wholly free from blot or blemish.

A 195 correspondent says that among the many excellent appointments at the W. U. main office, that of Mr. John H. Dwight as chief operator at large comes pre-eminently to the fore. Mr. Dwight, he adds, is not only a first-class manipulator of the key, but a thorough electrician, and, with malice toward none, he is the noblest Roman of them all.

In response to an inquiry from his New York friends, Colonel Lenhart, of Boston, says that he has not attended Sarah Bernhardt's receptions, and is not indulging in any luxuries. The gallant colonel's application to the General Superintendent for an increase of salary has been respectfully referred to Manager Milliken for investigation and report.

A trial of Gray's harmonic system took place in 195 Broadway, on Dec. 21, five sides being worked on a Boston circuit. The operators were Messrs. Jackson, Cushing, Richardson, Wilcox and A. Wright; 2,200 messages were exchanged in nine hours, a general average of 245 messages per hour or 49 messages per hour to each man. Operator W. H. Jackson's average was 54. The business exchanged, however, was old messages that had previously been sent. The best average made of late on the quadruplex instruments was by Messrs. McLaren and Allen, the former exchanging 432, and the latter 414 in nine hours, being an average of 48 and 46, respectively, per hour on regular business.

### Other City Items.

The office boys of the A. U. main office presented Manager Dealy with a handsome pencil case and pen as a Christmas gift. Mr. Dealy seems to be an exceedingly popular manager.

The illumination by the Brush light of a mile of Broadway, which commenced on the evening of Monday, Dec. 20, has given very general satisfaction. The lamps, which are each equal to about 100 gas jets, are arranged on posts 20 feet high, there being one to each square, alternating on each side of the street from Union square up to Thirty-fourth street. They are all in one circuit and worked by one generator. The cost is about equal to the cost for lighting the same territory by gas, but the electric light gives ten times as much light for the money. A newspaper may be read at a distance of 175 feet from any of the lamps.

At a meeting on Tuesday of the stockholders of the Mutual District Telegraph Company, already referred to in THE OPERATOR, the following directors were elected: T. M. Foote, H. W. Pope, J. A. Hewlett, T. E. Stillman, C. B. Hotchkiss, W. Mynderes, W. W. Rider, J. D. Haines and H. McGonegal. The following officers were then elected: President, T. M. Foote, formerly vice-president and managing director of the American District Telegraph Company; vice-president and general manager, Henry W. Pope, formerly general superintendent of the American District Telegraph Company and late general superintendent of the Metropolitan Telephone and Telegraph Company; secretary, W. W. Rider, late superintendent of the Circular Department, American District Telegraph Company; treasurer, Davison Brown, formerly with Brown Brothers, bankers.

## PERSONAL.

Lou Clarke has been transferred from Tolono to Carbondale, Ill., night office.

Mr. C. E. Thompson has been transferred from Rutland, Vt., to Troy, N. Y., as local repairer.

Mr. John Pender, of Atlantic cable fame, is expected to visit the United States in the Spring.

Mr. D. C. Chandler, formerly operator in St. Paul, Minn., is now with the U. P. Ry., at Plum Creek, Neb.

Mr. L. H. Hall, formerly of the O. & N. W. Ry., is working nights in the train dispatcher's office, Sleepy Eye, Minn.

Ed. Milliken is now night man at general office I. C. R. R., Chicago. Ed. has been subbing in “CH” for some time.

G. L. Baker, late agent and operator I. C. R. R., at Cullom, Ill., has been appointed manager W. U., at Tolono, Ill.

Geo. Z. Fisher, practitioner of dental surgery, a telegraph operator, has accepted a position as day operator at Wamego, Kan.



Mr. Charles E. Page, manager of the American Union office at Cincinnati, O., was married, Dec. 16, to Miss Alice Carey Jones, of that city.

Mr. Osborn, a well-known New York telegrapher, is at present doing the Pacific Coast. He was last heard of at Los Angeles and San Diego.

Mr. Lockwood, formerly of Toronto, is now employed as operator in the train dispatchers' office of the Southern Pacific Railroad at Los Angeles, Cal.

Mr. Thos. S. Collins (the only original Tom) who has been in the employ of the Military Telegraph Co., at Campo, Cal., has been transferred to Prescott, Ariz.

C. B. Fletcher has been appointed manager W. U. at Kankakee, Ill., vice S. L. Nelson, promoted to night train dispatcher at Champaign, Ill., during the absence of G. H. Rhodes.

Mr. Joseph Angell, general passenger agent and superintendent of telegraph of the Delaware & Hudson Canal Co.'s railroads, has tendered his resignation, to take effect Jan. 1.

Mr. J. B. Stearns, the inventor of the duplex, has returned from England, and will soon go to Mexico, to assist in laying the new cable from the mouth of the Rio Grande to Vera Cruz.

Mr. Griffith Owen, who has served the W. U. Co. for a number of years as local repairer at Troy, N. Y., has been appointed batteryman at Albany, N. Y., in place of Mr. Anthony Hedley, deceased.

Rev. Orville Coats, an operator of several years' experience, now a student in Madison University, occupied the pulpit of the Tabernacle Baptist Church in Albany, N. Y., morning and evening, Sunday, Dec. 19.

On the night of Dec. 14, the Cleveland (O.) Co-operative Stove Co., in which Manager H. L. Melton, of the W. U. was a stockholder, was burned out. The loss to the stove company was about \$85,000. Insured for \$60,000.

Readers of THE OPERATOR who know the man, even by reputation, will be interested, not to say delighted, to read in our Pacific Coast Notes, in this issue, that Manager Allen, of Sacramento, has retired from the telegraph business.

Mr. Dennis, who lately went to the Pacific Coast from New York, has been varying the monotony of regular duty in the San Francisco office by substituting for Mr. Bennett at San Luis Obispo, while the latter enjoyed a vacation.

Ed. Davis and James Holter are the operators at the P. & E. R. R. depot, Milton, Pa. Charles Wineland and Joe Miles are at the P. & R. depot. H. S. Hause and E. B. Fowler are at the junction of the P. & E. & P. & R. R. R. Jno. Wolfinger, Jr., is manager of the Western Union office, and W. A. Fisher manager of the American Union.

At the 115th annual communication of Mount Vernon Lodge, No. 3, F. and A. M., of Albany, N. Y., held Monday evening, Dec. 20, the following were among the officers elected: Junior Warden, Heman L. Waterbury; Senior Deacon, Charles E. Shelley; Member of Finance Committee, Henry V. Shelley. All of these gentlemen are well-known telegraphers, employed in the W. U. Co.'s Albany office.

Mr. Chas. Kleppinger, for the past three years manager of the W. U. Tel. Co., at Terrebone, La., has accepted the position of passenger conductor on the Morgan, Louisiana & Texas Railroad. Mr. Kleppinger is well deserving of the position he has gained by ability and a close attention to his duties. His place is filled by Mr. Chas. A. Wood, late Manager American Union office, Asbury Park, N. J.

Mr. A. T. Langehorne, chief operator W. U. office, Indianapolis, Ind., died in that city Dec. 19, of consumption. The funeral took place with masonic honors on the following Tuesday, and was very largely attended. The pall bearers were Mr. Gus Fuller, night chief; Mr. M. D. Butler, manager; John G. Blake, night manager; J. C. Wilson, manager telegraph office Union Depot; Alfred Winder, formerly chief, now operator W. U., and W. W. Smith, supt. telephones, all masons. Mr. Langehorne was exceedingly popular with his subordinates.

CHICAGO.—Mr. A. C. Murphy has gone to Des Moines, Iowa; Mr. William Ernesthausen, to Cincinnati; Mr. J. M. De Long has left for New York. Mr. Githens, who was summoned home

to Keokuk, Iowa, lately by his father's death, has returned. The following are taking vacations: Mr. Warren A. Baker, at Marshall, Mich.; Mr. W. L. Cullen, Toronto, Ont.; Mr. George Stapley, Belleville, Ont.; Mr. Edward Quick, St. Louis, and P. N. Collett, St. Paul, Minn. Your correspondent would be glad if these gentlemen would interest themselves, while on their vacations, in getting subscribers for THE OPERATOR, which their friends need only see to appreciate.

INNEWRI.

SUNBURY, PENNA.—Mr. Jacob Swenk is division operator, and Mr. William Bachman assistant train runner, for the Sunbury Division railroads. The P. and E. R. R.'s "Dy" office has Mr. Bridgens, day man, and Mr. Robert Grant at night. They expect soon to put two men on day duty. At the Western Union office Mr. H. L. Haupt is manager during the absence of Mr. Robert McCartney, in the Harrisburg Western Union office. At the American Union office, Mr. John McCormick is manager. Mr. Will Malick manages the Shamokin Crossing and warehouse. Mill Siding, the favorite country residence, is in charge of Mr. Samuel Gearhart. The dispatcher's office, at the Northern Central R. R. ("R. F.") is well managed by Mr. E. G. Young at day-time, and by Mr. F. S. Strickler at night-time. Mr. E. L. Taylor has just returned from a trip to his home. Mr. F. S. Spencer is "extra operator" for the P. and E. R. R.

On the evening of Dec. 17, a pleasant little affair took place at Harrison, Ont. Mr. C. Omera, the agent and operator of the T. G. & B., was taken by surprise by about one hundred people driving to his place and fairly taking possession of it. After enjoying a remarkably good supper, which came from baskets innumerable, an able address was presented to Mr. Omera, to which he made a suitable reply. Accompanying the address was a purse containing one hundred dollars, given by the members of the Fordwich, Gorvie and Wroxeter Church of England congregations. Mr. Omera, who is studying for the ministry, has, for the past six or seven months, taken charge of the mission in the absence of a regular ordained minister. During his short administration among us, he fairly won the hearts of the people by his preaching the gospel pure and simple, as well as by his kind and genial manner. It is with the greatest regret we have to part with him, and we predict for Mr. Omera a future in the ministry that will be an honor to him and the Master he serves.

R.

VALLEY RAILWAY, Ohio.—Several changes have recently taken place on this "short line." Mr. A. L. Shaffer, who was agent and operator at Peninsula, resigned to accept a much more responsible and lucrative position, for same company, at Canton. At present Mr. Shaffer is acting agent at Canton, vice Mr. W. C. Greenwood, resigned Dec. 15. Mr. T. H. St. John, formerly operator and assistant agent at Canton, has been appointed agent and operator at Peninsula. "D. M." is a genial fellow and good operator, and, being a bachelor, bids fair to soon become a Benedict. Mr. W. N. Bell, has been appointed agent and operator at Everett, vice W. O. Halstead, resigned Nov. 17, and now operator and clerk at East Akron station. Mr. W. M. Close has been appointed agent and operator at Krumroy, vice W. W. Rohn, resigned Nov. 15. I am sorry to say that THE OPERATOR is not taken by many of our boys. This is not as it should be, and we hope that the time will soon come when THE OPERATOR will be found in every office on this line.

"W."

GREENTOWN, Ohio, Dec. 21, 1880.

KANSAS CITY, Mo.—In my former notes and personals I inadvertently omitted to mention the A. & P. office, which is quite an "institution" here. They work one duplex circuit with St. Louis, which also connects the Board of Trade rooms between these two cities. The A. & P. furnish "C. N. D's" to our Board. They also are in connection with the Chicago B. of T. by direct wire through the W. U. office. Besides these connections they have one way wire north to Omaha. L. D. Stanley is manager, assisted by T. J. Thorn and Carl Clark is the night press operator. The telegraph fraternity of Kansas City have just united in a nearly unanimous call for a preliminary meeting, wherein to discuss the propriety of forming an Electric Society. The call is signed by nearly every operator and electrician in the city. This meeting will prob-

ably be held some night next week. W. E. Done, of the W. U. office, has resigned and been appointed manager of the Harlem, Mo., office. R. D. Blumenfeld was granted leave of absence to visit his home in Wisconsin, from Dec. 16 until Jan. 3. Several others from the W. U. office are promised short vacations during the holidays.

\* \* \*

PHILADELPHIA, READING AND POTTSVILLE LINES.—The personnel of south wire No. 1., P. R. and P. T. Co., comprises some well-known operators, as may be seen from the following: Messrs. Shea, McPayle and Ruddoch are at "X" office, Philadelphia, and the following array of talent dotted, like stars, along the line: At Falls, Mr. George Wilcox, manager, ably assisted by Messrs. Reardon and Gaul, the latter being "owl." At Spring Mills siding, Messrs. Whitehead and Fred. Wood, day and night respectively, attend to the register. Mr. William Pennington is day operator at West Conshocken; Mr. Reid, night man. Mr. H. J. Brown, familiarly known as "Browney," is manager at Bridgeport, assisted by Mr. Epright, while Mr. George S. Heaney attends to "19" reports at night. At Merion siding, there are Messrs. Lew. Buckley and John Beitenman, day and night respectively. Miss Covington is at Pt. Kennedy and Mr. Daniel Webster at Valley Forge. Messrs. C. B. Melot and George W. Vanderslice are at Perkiomen Junction, the latter for the Perkiomen Branch; while Mr. Palsgrove attends to affairs at night. Phoenixville is well managed by Messrs. Harry Keeley (days) and Ed. Leopold (nights). Messrs. Barlow and Miller attend to the day and night work, respectively, at Aramingo. At Pottstown, there is Mr. O. E. Barlow (days) and Mr. Palmer (nights). At Monocacy, Mr. James Powers (days) and Mr. Wells (nights). At Birdsboro', Mr. Epiheimer (days) and Mr. Brown (nights). At Exeter siding, Messrs. Levan and Hawden, day and night, respectively. At the dispatcher's office, Reading, the familiar "29" of Mr. J. H. Boyer is heard all day long, and the amount of work he does in a short time is astonishing.

## BORN.

COLWELL.—Dec. 19th, 1880, to Mr. Charles Colwell, W. U. telegraph office, at Columbus, a daughter.

## MARRIED.

FLIPPEN—SHIELDS.—Dec. 22, 1880, at Vicksburg, Miss., by Bishop F. W. Adams, Mr. W. E. Flippen, Manager W. U. Tel. Co., to Miss Mattie F. Shields.

ARNOLD—FISH.—Dec. 7, 1880, at New London, Conn., by Rev. W. W. Buckingham, Mr. Edgar M. Arnold, Manager W. U. Co.'s Glens Falls, N. Y., office, to Miss Gustava E. Fish.

AMES—MELINS.—Nov. 9, at Albany, N. Y., by the Rev. T. Harwood Pattison, Mr. Judson Ames, local repairer, W. U. Co., to Miss Annie M. Melins, both of Albany.

CUSHING—SIMMS.—Dec. 9, 1880, at the residence of the bride's parents, Myrickville, Mass., by Rev. Charles Stokes, Mr. John Franklin Cushing, of Myrickville, to Miss Mary Simms (late operator at Myrickville station), daughter of William Simms, Esq.

RICE—GILMOUR.—Nov. 25, 1880, at the residence of the bride's parents, near Albany, Oregon, by Rev. P. S. Knight, of Salem, Mr. Will B. Rice, agent Oregon & California Railroad, Albany, to Miss May R. Gilmour, only daughter of Jos. P. Gilmour, Esq.

LENTZ—JONES.—Dec. 14, at residence of bride's parents, near Quincy, Mich., S. R. Lentz, agent, to Miss Rosa F. Jones, operator, I. C. R. R., Arcola, Ill. The happy couple will spend a month in Colorado and New Mexico, after which they will resume duty at Arcola.

## DIED.

CANNON.—Dec. 25, 1880, at Buffalo, N. Y., Peter F. Cannon, Operator American Union, formerly of the W. U., aged 23 years.

LUDWIG.—Dec. 20, 1880, at Salem, Mass., of typhoid fever, Hartford W. Ludwig, of Waldsboro, Maine, late operator at W. U. office, Salem, Mass.



# "23."

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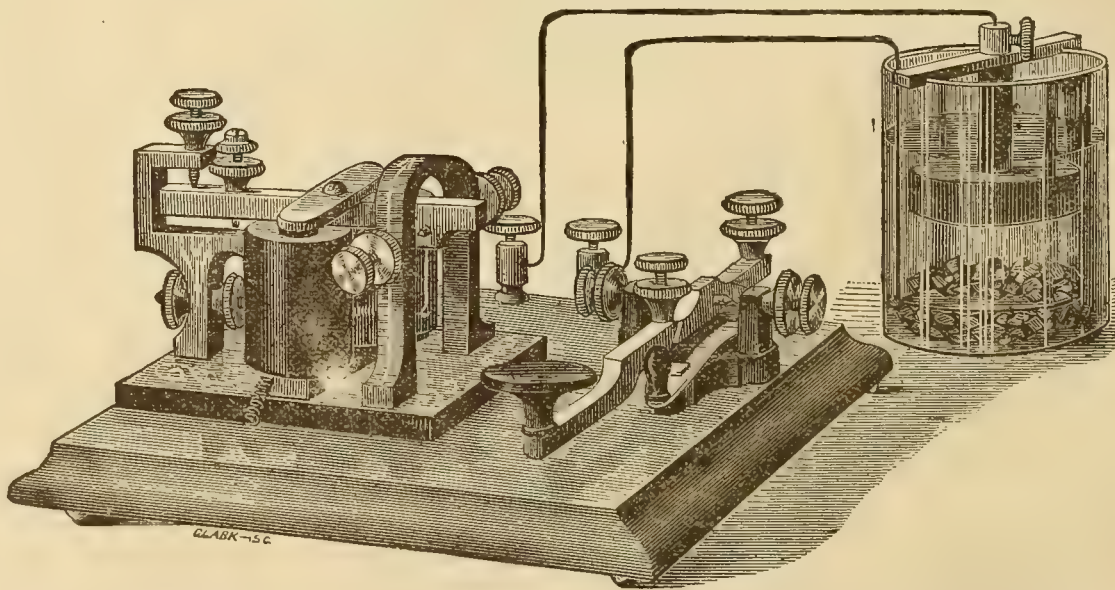
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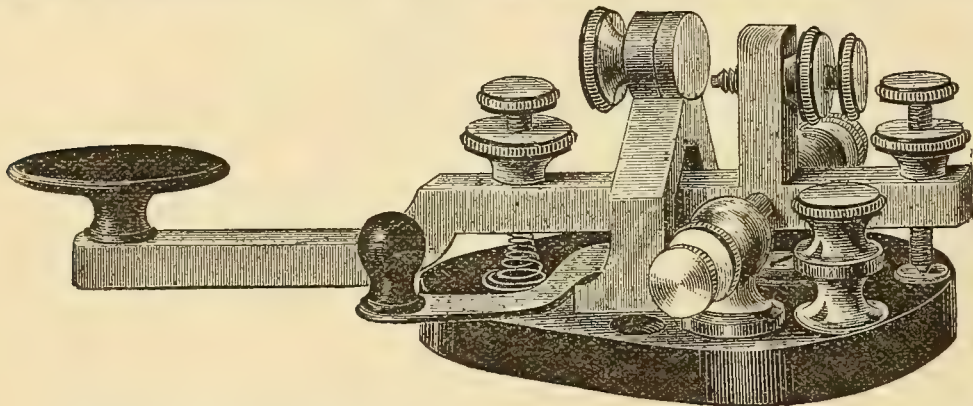
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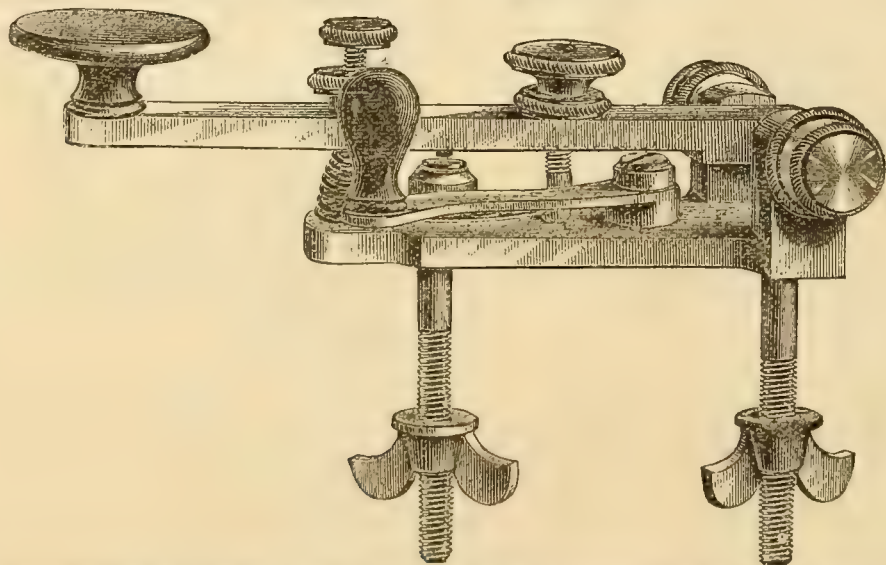
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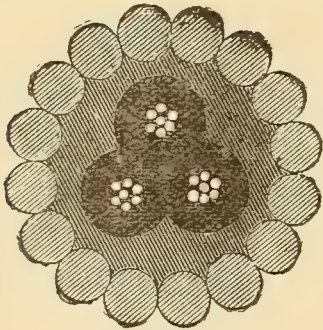
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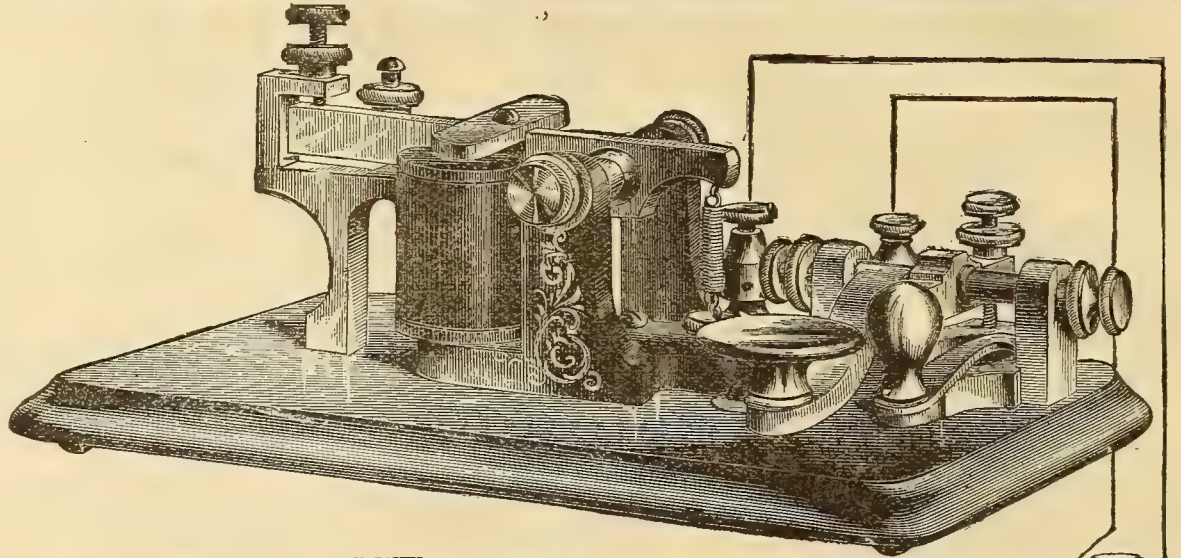
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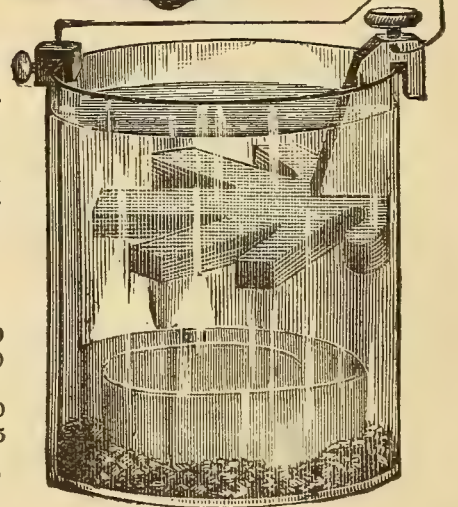
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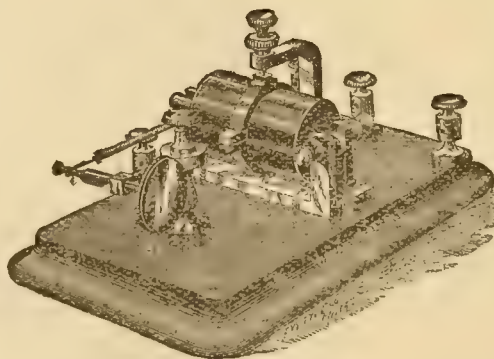
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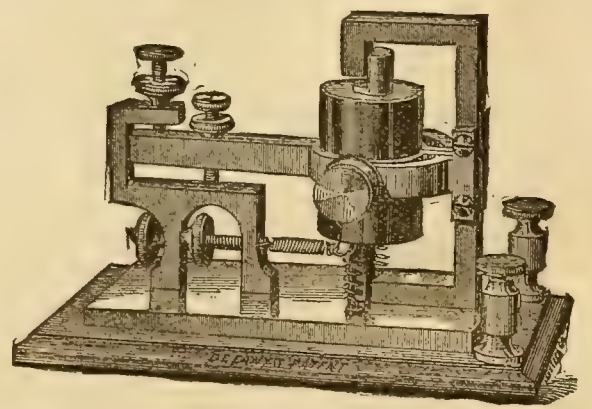
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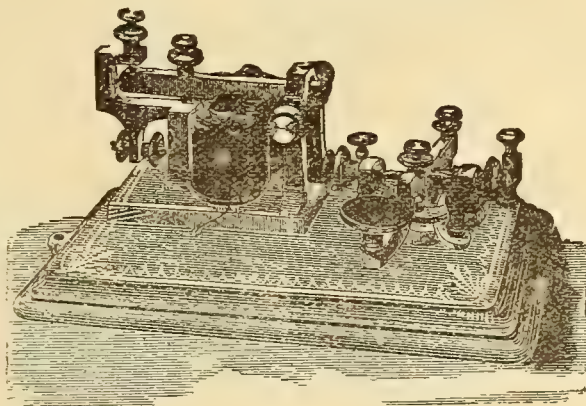
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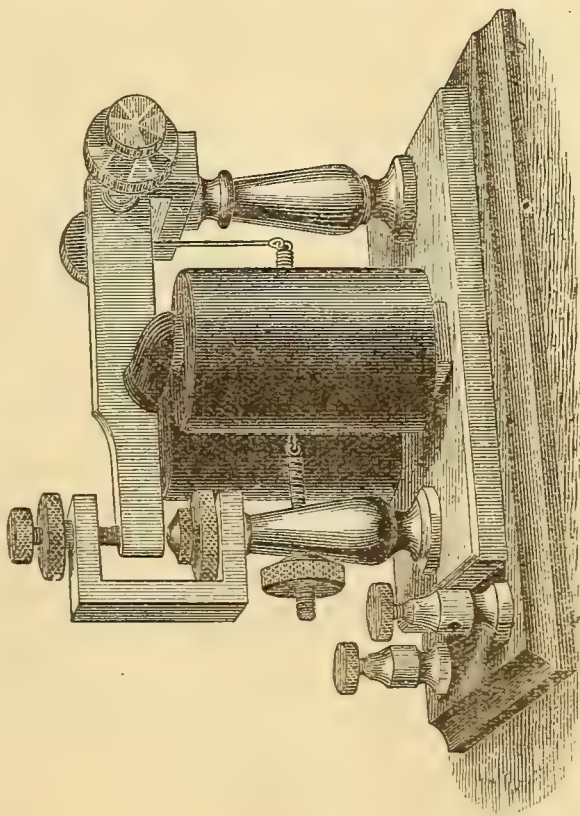
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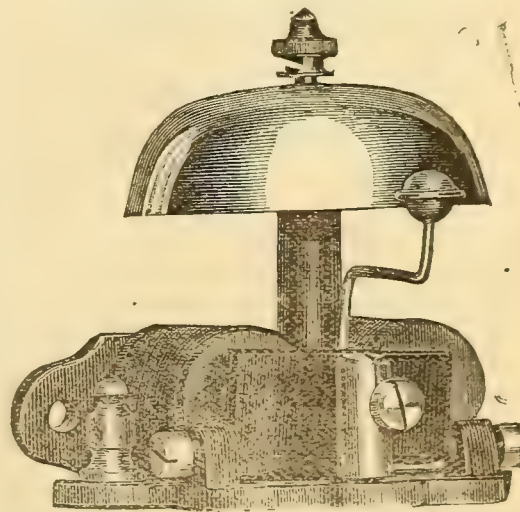
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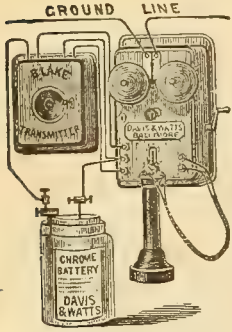
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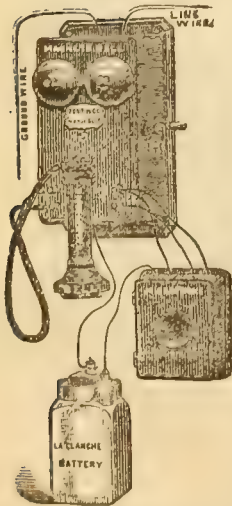
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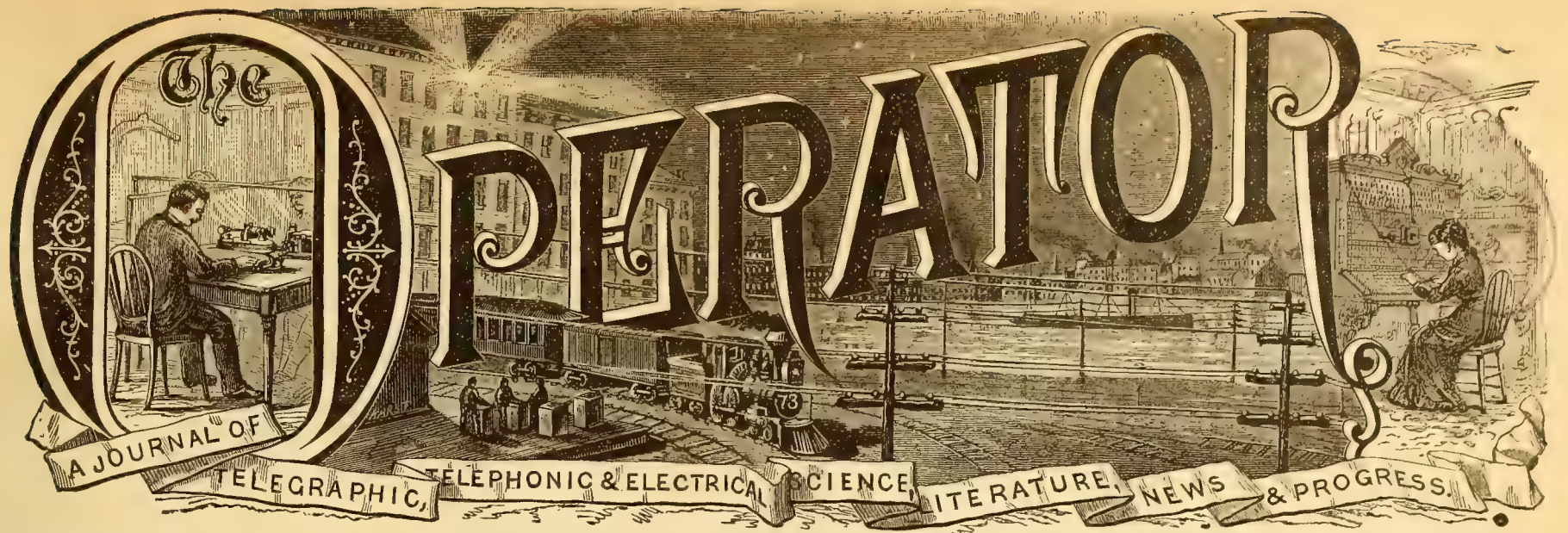
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### STILL SINGLE.

I stood by the "Blake Transmitter,"  
For the telephone bell had rung,  
And over the wire a sound came  
As though a maiden sung  
A musical tone quite familiar,  
Her voice I had often heard,  
For in answering daily telephone calls  
We had interchanged many a word.

Have you never received a letter,  
And paused ere breaking the seal,  
As you thought concerning the tidings  
That the contents might reveal?  
Did not a longing possess you  
To know what was really within,  
And yet to avail of that knowledge  
You seemed in no haste to begin?

In some such manner I tarried  
At the end of our telephone wire,  
Then at last, mustering courage sufficient,  
Began at once to inquire:  
"Well, halloo! well, what is wanted?"  
It seemed at least all I could do;  
When quick in return came the message,  
"Halloo! well, halloo, who are you?"

"Why, I am 'forty-eight,'" I responded.  
"You called only a moment or two."  
"Forty-eight," she repeated in answer,  
"Well, surely I don't wish for you."

I was giving my telephone number,  
As found on the company's page.  
But I fear, from her hasty answer,  
She thought I was giving my age.

Alas, that the blow came so sudden;  
I received it bewildered, alone—  
As the consciousness dawned there upon me,  
Rejected by telephone.

### A VAST MONOPOLY.

**Consolidation of the Western Union, American Union and Atlantic and Pacific Telegraph Companies.—The most Gigantic Telegraphic Combination the World ever Saw.**

The surprising announcement was made on Wednesday last that the two great competing telegraph companies, the Western Union (with its auxiliary, the Atlantic and Pacific) and the American Union, had decided to amalgamate, and form one gigantic organization. No official announcement of the terms has been made, nor will any be made until they have been submitted to and ratified by the various boards of

directors. For this purpose the Western Union has called a meeting of the board for Wednesday next, Jan. 19. The Atlantic and Pacific has called a meeting of its shareholders for Saturday, Feb. 5, to discuss "an agreement for the sale of the franchises and the property of the company to the Western Union Company."

When our last issue went to press there were no indications of a possible amalgamation; and it is now authoritatively stated that the negotiations which led up to the consolidation were not formally begun until the 2d inst., and that the first overtures came from the Western Union. The readers of THE OPERATOR have been already fully apprised of the details of the "telegraph war," a contention which, as it appears now, gave the greatest annoyance to the officials of the Western Union. About two months ago, immediately upon Mr. Vanderbilt's return from Europe, he was served with a notice to remove Western Union wires from the line of the Pennsylvania Railroad, and its operators and instruments from the railroad offices in New Jersey. That notice, which is referred to in another column, was to have taken effect on the 7th inst. Mr. Vanderbilt, evidently weary of the constant annoyance and expense, then made a proposition for a consolidation; but, after two days' consideration, it was rejected by the American Union. The relentless fight then went on, and the American Union at once proceeded to show its power. The "bear" movement in Western Union stock was commenced on the 22d of November, when it was quoted at the close of the day at 102½, having touched 103½. From that day it continued to fall, until just before Christmas. The heaviest assaults were made on Dec. 19 and 20. On the latter day the stock went as low as 77¾. Meantime Atlantic and Pacific varied only from 1 to 3 per cent., and American Union never declined more than 5 per cent. The stock was artificially depressed first by sales or reported sales of stock owned by Mr. Vanderbilt and other members of the directory, and what these stories failed in was accomplished by large reductions of rates and reports of a determination on both sides to wage a bitter war of competition. When the price was sufficiently low, those in the secret began to buy, until the consequent advance alarmed the street, and then the consolidation took place.

This important event was formally inaugurated on Sunday, Jan. 2, by a preliminary understanding, and the next day Wall street was more mystified than ever, there being less than half a

dozen people in the secret. Still, it was evident, even on the first working day of this year (Monday, Jan. 3), that some great event was impending, for on that day the mysterious heavy purchasing movement in Western Union begun on the Stock Exchange. In the succeeding week upwards of 676,000 shares changed hands—much more than the entire capital of the Western Union, while its market value ran up 22 per cent. in the same time. On the following Wednesday, A. and P. stock began to creep upward, though very few could say why, and on the succeeding Saturday (Jan. 8) the American Union fell into line, registering finally an upward movement of 16 per cent.

Meanwhile the principals were hard at work. There were so many conflicting interests to provide for that the propositions looking to a consolidation did not take definite shape till last Saturday. The lawyers of each company were given the memoranda of settlement, and from these they were instructed to frame an ironclad agreement. The lawyers were busy with this document all day Monday, and it is said, that when it was submitted to Mr. Gould, he and Judge Dillon went over it and made some important insertions and additions. These changes were approved by the Western Union interests, and a final meeting was arranged for Tuesday evening, the 11th inst., at Mr. Vanderbilt's house. At this meeting there were present besides Mr. Vanderbilt, Mr. Samuel F. Barger and Mr. Augustus Schell, representing the Western Union and Atlantic and Pacific Telegraph interests, and Mr. Jay Gould, Mr. Russell Sage and Mr. Fred. Ames, representing the American Union. There were few details to be discussed, and a preliminary agreement was signed and ratified by these six gentlemen.

As all the officials refuse to make public the details of this agreement, no positively accurate statement can be given, but the following is believed to be correct: The consolidated company is to retain the title of the Western Union Telegraph Company, with a capital of \$80,000,000. To perfect the company a new certificate of incorporation, with the capital fixed at that amount, is to be filed. The shares of the several companies are to be merged in the consolidated company at a valuation of about 129 for Western Union, 113½ for American Union, and 66¾ for Atlantic and Pacific. This means, practically, scrip dividends of 29 per cent. on Western Union, and 13 per cent. on American Union, making the capital of the first, in round figures, \$53,000,000. The capital of the American Union is



\$10,000,000, but it is also pledged to issue \$5,000,000 of bonds to the subscribers of the Central Construction Company, which furnished the funds to construct its line. These bonds, it is said, will be issued at once, and for the purposes of consolidation the entire capitalization of the company, including both stock and bonds, will be taken as the basis. The valuation of its \$15,000,000 capital at about 113½ equals, in round numbers, \$17,000,000. The capital of the Atlantic and Pacific Company is \$14,000,000 stock. It has no bonded debt. At the valuation of 66⅔ per cent., or thereabouts, its capital is not far from \$10,000,000 in the consolidated company. The three companies will then come into the consolidated company approximately as follows: Western Union, \$53,000,000; American Union, \$17,000,000, and Atlantic and Pacific, \$10,000,000; total, \$80,000,000. It is understood that Mr. Gould, Mr. Sidney Dillon, General Eckert and Mr. Russell Sage are to be elected directors in the new company, and that vacancies will be made for them by the resignation of a corresponding number of the present directors of Western Union.

General Eckert is also to be First Vice-President and General Manager of the consolidated company.

It will be some time, however, before this new scheme can go into effect. The Executive Committee of the Western Union has already issued a call to the stockholders for a general meeting to confirm the increase of capital stock; but as the by-laws of the company require at least two weeks' notice of such a meeting, it is not probable that the ratification will be secured till the end of the month. The Stock Exchange requires sixty days' notice of the increase of any capital stock, so that if the negotiations are successfully terminated, the extra stock will not be admitted on the Stock Exchange till April 1.

The profits of this great scheme have flowed into the pockets of the select few, and the oldest brokers in Wall street say that they never knew of a deal in which the public has lost so much money as this one in Western Union. Hundreds of small operators have been cleaned out of all they had. In fact, it is conceded on all sides that the present move has "caught" more professional speculators in its web than any other previous speculative movement.

We have received a communication from thirteen New York operators inquiring, in view of the consolidation: "Whether the several offices will be maintained as at present? If not, what disposition will be made of the employés, and what the effect on salaries?"

The probabilities, we regret to say, are that many offices will be closed and many employés be thus thrown out of employment, which cannot but have the effect of reducing salaries. We can only hope—and we should not be surprised to see it—that some hitch may occur to at least postpone the consolidation; or, if not, that the rapid growth of the business will furnish employment to most, if not all, of those now engaged in it, so as to prevent a repetition of the overcrowding of the ranks to which we were treated after the Western Union-A. & P. pooling arrangement.

Although there does not seem at present to be a very brilliant prospect for a competing company, still we probably shall have one before a great while; and, in the meantime, the Western Union, it is to be hoped, will not repeat its former mistake of grinding down the salaries of its employés to the starvation point, even if there be, for the time, no opposition back door,

## An Essay on the Natural Enemies of the Telephone.

BY T. D. LOCKWOOD.

At the request of several persons actively engaged in the business of telephony, I have taken up this subject, though comparatively unprepared to give it consideration commensurate with its vital importance to every one who uses a telephone in any form or manner.

When some future historian of the world engages in the ever-increasing task of recording the vicissitudes, changes and progress of this self-sufficient planet, and, after reviewing the dark ages of antiquity, the classic age of Grecian domination, the iron age of the Roman republic, the Augustan age of the empire, and the semi-barbarism of the middle ages, arrives at the present era, he will have no difficulty in deciding that the proper designation wherewith to immortalize it will be "the electrical age."

For we employ the unseen, yet active, all-powerful and universal force, or agency, in almost every service that can be imagined.

If the school girl's definition of electricity, namely: "a force known only by its manifestations," be correct, as with some modifications it undoubtedly is, it must still be conceded that its manifestations are illimitable, and that the human race has accomplished great results in subduing so thoroughly what was, even until the present century, so untamable, wild and free.

We send our thoughts over land and sea; we speak to distant friends and correspondents without leaving the fireside; we light our gas instantaneously, without regard to the number of burners; we leave our banks and counting houses secure; watch our watchman; spread our fire alarms; explode our mines; regulate our clocks; light our streets and halls; keep one day ahead of the weather, and ring our domestic bells by the aid of the wonderful and mysterious force; and yet we do not know what it is!

Those who know it best regard it as a form of energy which causes the infinitesimal particles of matter to alter their positions in regard to one another.

The telephone, though not discovered until 1876, is based upon one of the best-known properties of electro-magnetism, namely, the fact that "when a spool of wire with a soft iron core is fixed on the pole of a permanent magnet, any alteration in the distance of an armature placed in front alters the magnetism of the core and sets up a current in the coil wound on the bobbin."

It is scarcely necessary at the present time to give a detailed description of the construction of the telephone, seeing that it has become, so to speak, a household word among the American people.

Suffice it to say, in explanation of its action, that the diaphragm of the telephone, when put in motion by the voice, vibrates, approaching and receding from the core, and, thereby, under the law quoted above, sets up currents in the wire of the spool, and consequently in the line wire to which it is connected; these currents pass along the line wire, and arriving at and passing through the coil of the distant telephone, act on its diaphragm, and set up vibrations exactly corresponding to those of the initial diaphragm, and thus reproduce the original sounds.

The currents caused by the very small movements of the diaphragm in front of the magnet are necessarily extremely feeble; so much so that the late Professor Pierce, of Boston, compared them to those which would be produced

by an electric source of which the electromotive force should be one two-hundred-thousandth part of the power of a Daniel cell. It is, therefore, evident that the apparatus which can be distinctly acted upon by such currents must be correspondingly delicate and sensitive.

We see, then, that the very sensibility on which the legitimate action of the telephone is so dependent becomes, under certain circumstances, positively detrimental, because it is thereby rendered equally subject to be influenced by very slight external or foreign currents; in fact by any extraneous causes which affect the electrical condition of the wire.

As an inevitable result of this extreme sensibility to external currents, which are usually stronger than the delicate magneto telephonic currents, the latter are to a certain extent, overpowered by the former, whether acquired from the earth, or by leakage or induction from other electrical conductors; and the manifestations of the foreign currents in the receiving instrument of the telephone wire are similar to those exhibited on their legitimate apparatus while the vocal transmission is correspondingly weakened. We will now consider and endeavor to classify the different disturbing sounds heard in the telephone, and then trace them to their several originating influences.

These may be arranged in five classes:

First: Frying, hissing and bubbling noises.

Secondly: Screaming and whistling noises.

Thirdly: Jerking and rasping noises.

Fourthly: Morse or other telegraphic communications in course of transmission on other wires.

Fifthly: Telephonic conversation, or vocal sounds in process of transmission on other wires.

Of course, the telephonic lines are also subject to interruption from other causes, such as breakage of wires, circuits accidentally left open, crosses, or contacts with other wires, and escapes, or grounds; but these troubles, being comparatively well understood, do not come within the scope of the present article.

The noises and disturbances of the first and second classes are, I conceive, almost totally due to earth currents, atmospheric electricity and thermo and hydro-electric reactions.

Earth currents are now known to be always traversing the wires. They affect lines running northeast and southwest most frequently, and vary with the time of day.

There is, likewise, always free electricity in the air and in the clouds, which acts on the earth and on the wires, they being generally conductors to earth.

These noises are much more intense by night than by day, on long lines reaching their maximum about 12 midnight, the disturbances of the second class becoming especially intolerable in the night.

M. Gressier, a French philosopher, accounts for these disturbances as follows:

During the day the current developed between the wires and earth-plates, on the one hand, and the earth itself on the other, the poles being the conducting medium between the two, are directed from the line to the earth, because the heat of the wire is greater than that of the earth, the currents being then thermo-electric."

During the night the wire becomes cooled, while the earth retains its heat; the currents then flow from earth-plate to line, and are hydro-electric. No line in which the earth forms a part of the circuit can be totally free from these disturbing influences; consequently, the only radical remedy for them is the use of a metal-



lic circuit. This being very expensive and inconvenient, it is well that disturbances due to the foregoing causes are not so violent as to interpose serious difficulties in the working of the lines, with the exception of very long ones, when the battery transmitter is employed.

We now proceed to the third class of interfering sounds—jerking and rasping noises.

These I regard as being chiefly attributable to defective joints in the line wires and loose connections in instruments. Such imperfect contacts set up true microphonic action, with its resultant sounds. The remedy for this class is obvious: More care in making and soldering joints, and more attention to the inspection of instruments and lines.

We now come to the disturbances which constitute the worst enemy of the telephone electrician, namely those which I have arranged in classes 4 and 5.

These are undoubtedly due to a variety of causes, the principal of which are leakage of currents from other wires; electro-dynamic induction and static and magnetic induction; those of the fifth class being also referable to the surcharging of insufficient and inefficient ground wires in central offices.

The first cause, leakage, is not exclusively an attendant on telephone lines, being likewise an old bugbear of all telegraph lines. Imperfect insulation allows the current to divide itself between all the wires on the pole, in proportion to their respective resistances; and as the shorter the wire the less the resistance, the tendency is to escape from a long circuit into a short one. When the current escapes to the earth, no great harm is done, as the only effect is to weaken the signals; but when it leaks into another wire, it confuses the signals on the second line. It is obvious, therefore, that the true remedy for this trouble is to convey the escaping currents to earth.

The plan recommended by Mr. Varley, many years since, and adopted on the English lines, is to attach a thick wire to the pole, coiling the earth end in a spiral under the foot of the pole, and letting the upper end of the wire project above the top of the pole, to serve as a lightning conductor. Wires are then attached to the under side of the cross-arms, and one end fastened firmly to the insulator pins, while the other end is firmly spliced and soldered to the thick wire running down the pole. The leaking currents thus find it easier to go to earth than to any other wire. As no insulation is absolutely perfect, this arrangement should be applied to all long lines. It is, of course, most effective when the earth wire is attached to every pole. The earth wires however, do more harm than good when they do not make a good earth connection; and it may here be stated that a buried plate to which the pole wire is soldered is the best earth. In some places the earth wires have been merely coiled a few times round the butt of the pole. Such a contrived earth has, on its resistance being measured, been found to vary from 2,100 to 6,000 ohms. It cannot, therefore, be commended. If good earth cannot be obtained in some places, an uninsulated wire may be run from pole to pole, connected to the earth wires on the cross-arms, and put to earth at convenient points.

This subject is fully canvassed in Culley's "Handbook," and Preece's "Telegraphy." The arrangement, though well known in England for many years, was patented by Mr. Varley in this country in 1868, and in a recent patent has been improved by the application of metallic sleeves, or sockets, in the cross-arms, to which the lateral

earth-wires are attached, and in which the insulator pins are inserted; also by running the uninsulated wire attached to all the ground wires throughout the whole length of the line. When well applied, the earth wires carry off a large percentage of the interfering currents.

Electro-dynamic induction is the next cause, and, after leakage, is the most troublesome. It is very difficult to render in a clear manner, to persons unacquainted with electrical phenomena, the idea expressed by the word induction. The majority of those actively engaged in the telephone business, it is well-known, are not practical electricians, and for this reason the word induction, spoken and written of a few times in reference to telephonic disturbances, has been eagerly snapped up and applied indiscriminately to all kinds of such disturbances. It is, however, a well-defined term; has a well-defined meaning, and well-defined laws. It was thoroughly studied by Faraday, who made public his experiments with their results. Induction, briefly expressed, is the name given to electrical or magnetic effects produced in bodies to which the exciting cause is not directly applied.

Dynamic induction is the power which a current in motion has, when flowing in a conductor, of inducing currents in neighboring conductors. The most obvious remedy for troubles originating from this cause is the employment of a return wire, parallel and near to the first, instead of an earth return. Under such conditions, the currents induced on one wire would be neutralized by those resulting from the same induction on the second wire, which would then act in an opposite direction. This, however, would only be efficient when the wires were near each other, and both equally near to the disturbing wire. This idea was early proposed by several persons.

Another idea was broached by Mr. Preece, in a lecture before the Royal Society in 1877, which I am disposed to regard as effective.

It applies both to static and dynamic induction. Static induction, it may here be well to explain, is that influence which an electrified body has on all conducting bodies in its immediate vicinity.

Mr. Preece's proposed remedy was to interpose between the telephone wire and the other wires a conducting body in communication with the earth, and capable of acting as a screen to the induction, by itself absorbing the electro-static effects. He suggests a practical application, in the employment of insulated wires covered with an iron or metallic case, the case being in direct communication with the earth. It is my impression that the outside conductor, even if unconnected with the earth, would very much counteract the dynamic induction, by setting up a counter induced current to that of the inducing wire, and also by absorbing into its greater substance the currents which would otherwise be divided among the other wires on the same poles. The earth connections, I think, effectually dispose of the static induction, on the principle quoted by Jenkin, in his valuable work on electricity, in which he states, as a well-known fact, that if an uninsulated metal plate be interposed between an electrified body and an insulated body, all inductive effects cease, but if the metallic plate be insulated it has no such effect.

To the best of my knowledge, this remedy, of insulating the conductors and then surrounding them with a conducting medium in connection with the earth, has never been applied to pole lines, chiefly on account of the expense. It has,

however, been applied to conductors, when grouped together into a cable, and gives satisfactory results.

First recommended, so far as the telephonic application is concerned, by Preece, it was, in 1877, tried on the Post-office telegraph lines in England. Subsequently it was applied to telephone lines by C. E. Chinnock, of New York, an American inventor. It was then discovered that a French physician had laid down the principle, applied it to telegraph cables in 1869, and patented the cable.

This cable is made substantially on the plan spoken of by Preece, and works well. Subsequent experiments lead to the belief that if conductors are grouped together, well insulated, and the whole inclosed in a metallic tube, inductional troubles will be practically obliterated. In any case, the greater the number of wires the less the disturbance, as the foreign currents must divide in direct proportion to the number of wires, other things being equal.

A paragraph has recently gone the rounds of the newspapers, to the effect that a firm of Swiss wire manufacturers have discovered a new process and material for the manufacture of cables which totally prevent inductional effects. No details, however, are as yet given.

Magnetic induction between wires conveying currents, though present, does not, I am convinced, interfere to an appreciable extent with telephonic transmission. It may, therefore, be ignored in the present article.

As regards the size of line wire, it is rather unfortunate that two obnoxious forces, leakage and induction, are at swords' points, leakage being lessened by the use of larger conductors, and induction correspondingly increased, and consequently diminished by the use of smaller ones. No remedy for this is at present discernable.

Lastly, I am firmly persuaded that much of the interference between wires centering in the same office, arises from the fact that far too many wires are worked from the same earth terminal, and that often none too reliable. I am in favor of multiplying ground wires at central offices, of using larger ground wires, and of insisting on more care in their attachments. Too much stress cannot be laid on this point.

The problem of long line telephony is rapidly yielding to the energy and thought that have been applied to it, and will, no doubt, soon be solved. When it is done, we shall probably be surprised to see how easily it was accomplished. To my mind, the chief obstacle is *poor insulation*; and I conclude by saying: Take more care to use good ground wires; use proper earth wires and their connections on poles, and, above all, *improve insulation* in every possible way.

#### The Metropolitan Press on the Consolidation.

[From the Herald of Jan. 14.]

Whether business is meant or not, or whether the talked of consolidation is merely a job "put up" for speculative purposes, is a matter of considerable doubt. The parties who have thimble-rigged the street so effectively are quite capable of abandoning the whole project (which looks so certain to-day), provided they can market their long stock at a satisfactory profit and get comfortably short at high prices. Supposing, however, that the consolidation is meant to be carried out in good faith, what sort of inducements are offered to investors in the new company? It is stated that the combined companies of Western Union, American Union, and Atlantic and Pacific are to be merged into a joint stock company, representing \$80,000,000, and upon this amount satis-



factory dividends are expected to be paid. Western Union, by its last report, showed its inability to earn little or nothing over and above expenses, and consequently the onus of the dividends rests upon the other two companies. That these can pay a decent dividend upon their own proportion of capital and have enough left to help Western Union out of the scrape is simply preposterous. The proposed capitalization is more preposterous still. Western Union, costing \$41,000,000, can be repeated for \$15,000,000. American Union, which is to be capitalized at \$15,000,000, has cost about \$4,000,000, and Atlantic and Pacific some unknown number of dollars that will scarcely exceed the latter figures. In short, the public is invited to buy into a property which is nominally worth \$80,000,000, and is actually worth not more than \$30,000,000. Beyond the rascality which lies behind the whole of this Western Union movement, regarding its speculative way, lies the fact that the public are ultimately to be made to pay for it in the establishment of a close monopoly, higher rates for messages, and the usual tyranny which follows the beck and nod of imperial control.

[Daily American Exchange, Jan. 14.]

Regarding the telegraph situation little can be added to what we have already published. The facts in the case are these: W. B. Somerville, superintendent of the Press Bureau of the Western Union Telegraph Company, has stated that Dr. Norvin Green, president of the company, authorized him to say that it had been agreed to consolidate the competing telegraph companies. Details of the terms of the consolidation are withheld until the directors of the Western Union pass upon them. Every officer and director of the Western Union, the American Union and the Atlantic and Pacific telegraph companies refuses to be interviewed on the subject. It is left to the public to guess whether the terms published in some of the morning newspapers, without the mention of a single tangible authority, are correct. It is left to the public to wait for the truth until the directors of the three companies have approved any compact reported to be agreed upon; and until the stockholders of the three companies have formally ratified the action of the directors. We say it is left to the public to wait, but there are some of its members who may be cajoled into buying at high prices the Western Union stock which the controlling spirits in the consolidation scheme may—possibly may—wish to give them.

"That man has not profited by the experience of the past who will believe that the Western Union and the American Union telegraph companies are to be consolidated or united in any way until the final step necessary to that end has been taken and fully made public." The Pennsylvania Railroad Company has a contract with the American Union under which the latter yields the former a handsome sum for its use of the Pennsylvania telegraph lines; is the "consolidated company" to accept this contract and terminate the pending legal litigation by which the Western Union recently hoped to obtain something for nothing? The Baltimore & Ohio Railroad Company has extensive telegraph lines, from which it dismissed the Western Union some time ago; is the reported monopoly to inherit the favors of a corporation which has never submitted to the monopoly's domination except when helpless? A month from now the public will learn whether the reported consolidation is genuine or is a child conceived in dishonesty and born in the debauchery of stock jobbery. But there is one lesson to be drawn from the transaction, no matter how it terminates. The public need not look for a permanent opposition to monopoly from men who are ready to sell their friends' souls for the sake of their own pockets.

[From Truth, Jan. 14.]

As a leading broker said to a *Truth* reporter: "There are millions in this scheme, and they are to be made by the few within whose circle the secret can be kept. The longer the state of uncertainty can be sustained the better it will be for them. I have no opinion to express, as it is a matter of business to me."

An opinion is expressed, however, that in spite

of the assurances of the officers that the amalgamation is decided upon, and will be immediately settled, the controlling interests will manage to raise serious obstacles, only to be cleared away when the consequent depressions shall have been taken due advantage of.

Mr. Jay Gould, when the American Union was projected, expressed his belief in the reduction of rates to the lowest practical limit, as the best means of increasing the profits of a company.

His war with the Vanderbilt interest in the Western Union has compelled a resort to that policy, but the entire monopoly will most probably result in an increase of rates, that the litigation between the two companies may be paid for by the public during that period within which there can be no relief. When the public becomes aroused to a proper pitch of indignation, another company will then be projected, and the Goulds, Vanderbilts, Sages, Eckerts, will once more reap a golden harvest.

It is beyond speculation that a large number of offices could be closed with advantage to the combined companies, and materially reduce expenses. This, of course, means not only that numbers of employes will be dismissed, but that the great supply will enable the limited demand to select those who will work at the lowest prices. While Mr. Gould will make \$5,000,000 by the transaction, some hundreds of clerks will be thrown out of employment, and hundreds more retained at a point just above starvation wages. But that is the usual "divvy" in such cases.

It is said that Mr. Gould has a more subtle scheme behind this amalgamation. It would not be a bad stroke of business, after having consolidated, to prevail upon the Government to purchase the entire system at a price which should be satisfactory to the sellers. Mr. Gould is alleged to have expressed his intention of withdrawing from telegraph matters—a statement which may be taken for what it is worth.

[Times, Jan. 14.]

The consolidation is but another step in the process of building up a vast monopoly in the hands of a few great capitalists. In 1858 the capital of the Western Union Telegraph Company was \$385,700. Eight years later it had expanded to \$22,000,000. Of this, \$3,322,000 had been issued for the purchase of competing lines, but nearly \$18,000,000 was put out in the form of stock dividends. It constituted, in fact, an enormous injection of water into the capital, and the shares were not worth twenty five cents on the dollar in the market. The next step taken was to buy up the United States Company, for which \$7,216,300 more of stock was issued, which is believed to be five times the value of the property acquired. Then followed the absorption of the American Company. Its stock, which was also enormously inflated, amounted to \$3,833,100, but \$11,833,100 more of Western Union stock was launched in securing the line. This brought the nominal capital up to about \$41,000,000, upon which the public has been providing the means for payment of an 8 per cent dividend.

After the Western Union Telegraph Company had attained this enormous growth, and apparently established itself as a monopoly in the business of transmitting messages by electricity, Mr. Jay Gould began his periodical raids upon it for the purpose of speculative gains and an ultimate share in the monopoly. His method has been to start a rival company, cut rates, and bear Western Union stock, and then open negotiations for a combination. \* \* \*

The unchecked growth of this huge monopoly thus far is a sufficiently startling phenomenon, but we have no assurance that its ultimate dimensions and its full power will have been attained when Mr. Vanderbilt, Mr. Gould, and their associates, have completed the bargain which is now on foot. There is nothing to prevent a repetition of the processes of the past, so long as the public will submit to any taxation which these daring operators may see fit to put upon it for their own enrichment. The operations which we have briefly sketched are attended with a merciless fleecing of small speculators, and the final result is a gigantic monopoly, against whose exactions the public has no protection.

### Fighting Continued Until Consolidation Came.

About three months and a half ago, the Pennsylvania Railroad (in the name of its leased lines) notified the Western Union Telegraph Company that, on and after the 6th of January, it was their intention to terminate all existing contracts with the Western Union (this period of time being deemed a sufficient notification, under the contract); and that, after January 6, the Pennsylvania Railroad would be willing to enter into a new contract "upon terms deemed by the Pennsylvania Railroad equitable and fair"—presumably, the same terms as are now enjoyed by the American Union Company.

Previously to this, the American Union Company had contracted with the Pennsylvania Railroad for the privilege of erecting poles and placing wires thereon along the wires controlled by the latter company, the consideration being two million dollars for twenty years, or an annual rental of \$100,000. Heretofore, the Western Union has been operating the same lines, in New Jersey, upon thirty-year-old contracts, between the American Telegraph Co., the Magnetic Telegraph Co., and the Camden & Amboy Railroad and other companies, to whom the Western Union & Pennsylvania Railroad respectively succeeded. The Western Union maintains that these agreements—the first of which is dated October 17, 1846—still hold good, a position which is disputed by the Pennsylvania Railroad.

To settle the matter the case was, on the 4th inst., carried before the United States Court, in Philadelphia. Preliminary argument was had, but the case was postponed until Monday next (17th inst.), when a final decision will probably be reached.

As, by the Pennsylvania Railroad's notice, the contract with the Western Union expired on the 6th inst., and as it was understood that after that date the railroad company intended to throw off the Western Union wires from its poles, the Court granted a preliminary injunction, restraining the railroad company from further action until the case can be fully heard on Monday next.

Meanwhile, impatient of the law's delay, the Western Union and American Union have renewed the "war" of a year or so ago in New Jersey, a number of the poles of the latter company being cut down, and several employes of both the Western Union and American Union being arrested and held to bail for interfering with each other's lines. Now, that the consolidation has been effected, however, we have probably heard the last of these "wars" until the next opposition company comes along.

A gentleman, whose prominent position with the Western Union makes him well informed on all matters of this character, in a private note to us says:

The trouble at Rahway was caused by the A. U. setting extremely big poles right by the side of ours, and between our wires. They were so large that our wires touched the sides of the poles. Then the constant stringing and changing of A. U. wires, with their arms above ours, you can imagine the trouble it would be to us. These poles—quite a number of them—are on private property, the owner of which leases the right of way to the W. U., but not to the A. U.: so they were trespassers, and the owner requested the W. U. men to chop them (the A. U. poles) down. They got one down when the A. U. men, who were on guard with a warrant, had the W. U. men arrested. The trouble on the P. R. R. amounts to just this: the road has, by squeezing the A. U., got a fat thing out of them in leasing the right of way, and now it wants to get the same money (proportionably) out of the W. U., but the latter demurs. There is no doubting the fact that the A. U. folks pay all these railroads an extremely large sum of money for their privileges—all they will ever be able to get out of them. The A. U. is being used as nuts by these R. R. folks, who have always been unmercifully squeezed by the W. U., and are now trying to inaugurate a change.



### A Commendable, but Exceedingly Tardy Effort to Make Amends for a Cruel Blunder.

John George Boyce died November 15, 1877, of colliquative diarrhoea. This was sworn to at the time by his attendant physician. Some self-important and absurd creature undertook to prove that Boyce died of "consumption," and succeeded so well that he saved the dollar which would otherwise have been charged him as an assessment. So the case went on for three years until the *Magnet*, last summer, injected new life into the subject. Since then THE OPERATOR, knowing a thing or two about the stupid manner in which the thing was "managed," has had something to say with regard to it. Three years is a long delay, but we believe that it is better late than never, and therefore hail with much delight the following notice, which is being sent to all members of the T. M. B. A.:

"John G. Boyce, a member of the Telegraphers' Mutual Benefit Association; certificate No. 2,052, was issued Oct. 6, 1876; died at Lake City, Florida, Nov. 15, 1877.

"When application was made by his heirs for the amount due in the case, information came to the secretary which induced the presumption that incorrect statements had been made by the deceased as to the condition of his health at the time of his application for membership, at which time, it was asserted, he was consumptive and must have known it. So strongly was this urged that, on the vote being taken on the acknowledgement of the claim, five members of the executive committee voted against and four in favor of its payment. The claim was therefore rejected. An appeal to the annual meeting of 1878 led to a like decision, and by that action, which took the case beyond any further action of the executive committee, reconsideration of the claim has been debarred.

"So much feeling has grown out of this decision; the friends of the deceased, including many members of the association and the agent, strongly resenting the imputation of fraud; and in view of the closeness of the vote by which the claim was rejected, a movement was inaugurated at the close of your last annual meeting to relieve the widow and orphaned family of Mr. Boyce, who are in very destitute circumstances, by an appeal to the members for a voluntary subscription for their benefit. This practically leaves the settlement of the case to the members, and already many have responded generously to the fund. The opportunity is now given to all to participate therein, and to which I have been authorized to invite you; any amounts subscribed thereto to be forwarded through the agents as usual as in the case of regular assessments.

"If you desire to contribute to this fund, please remit such additional amount in connection with your next assessment, filling up the accompanying special blank for that purpose.

"The amount received from each agency for this fund will be acknowledged in the *Journal of the Telegraph*, and a statement made of its payment to the beneficiary.

"By order of the executive committee,

"J. N. ASHLEY, Secretary.

"NEW YORK, Jan. 1, 1881."

### The American Cable Company.

Our English cousins appear to be very much exercised over the fact that "the Americans" have presumed to undertake to lay Atlantic cables of their own; and that "the Americans" have shown a disposition to give the existing English and French companies the go-by—whatever that is. The fact that the old Anglo-American—the sixty-six cable, and the sixty that, and the sixty other—the Direct cable, and the New French Company, have never yet paid enough dividends to Mr. John Pender and others, seems to give our cousins a great deal of anxiety about the financial prospects of two new "American" cables. Hitherto, Mr. Pender's idea of an "international cable" has been one where

all the profits of ocean telegraphic traffic must necessarily flow into the pocket of John Pender. Anything outside of this is really astonishing to Mr. Pender. Still, we see no reason, Mr. Pender's patriotic views notwithstanding, why "the Americans" should not put to the test their theory that competition is the life of trade; and, by laying costly but efficient cables at their own expense, further astonish Johnny Bull by making handsome profits in a field—or ocean—where he has signally failed.

A special dispatch from London says that the news of the consolidation of the American Union and Western Union Companies has been received with comparative indifference in the London stock market, where little or none of the stock of either company is held, and is discussed only in so far as it is thought likely to effect the new American cable enterprise. Inquiry shows that it has evidently strengthened that enterprise, as General Eckert, the present President both of the American Union and of the Cable Company, will take the general management of the entire consolidated telegraph company, and that the American Cable Company, under his supervision, will probably extend the scope of its enterprises across the Pacific to Japan and China. The Messrs. Siemens are working night and day on the cables ordered for the Atlantic service, and they will be ready earlier than was anticipated. The construction of the core and the armor for the new American cables will make them the finest, beyond all doubt, yet laid.

### A Well-Deserved Compliment to Superintendent Brenner.

On Christmas eve, Mr. J. A. Brenner, Superintendent of the Third District of the Western Union Telegraph Company, while about to take his departure for Atlanta, was presented by Mr. J. M. Crowley, Manager of the Augusta office, with a magnificent silver testimonial in behalf of the employees of the Third District of the Western Union Telegraph Company and Telephone Company. The silver service consists of a solid silver tray, with coffee, tea and chocolate urns, sugar dish, butter dish, syrup stand, cream pitcher, slop bowl and two cake baskets, the latter being filled with the cards of the donors. On the tray, beautifully engraved, were these words: "Presented to J. A. Brenner, Superintendent, by the Employees of the Third District, December 25th, 1880." The other articles are each engraved with the letter "B."

Mr. J. M. Crowley, manager of the Augusta office, made the presentation address, and Mr. Brenner returned thanks in a neat off-hand speech.

The idea of the surprise was a good one, and its execution was perfect. The operators throughout the district, from Wilmington to Jacksonville, in 126 offices in the States of North and South Carolina, Georgia, Florida and Alabama, all combined in heart and pocket toward the bestowal of a Christmas present handsome enough to show their regard for Superintendent Brenner. Especial mention must be made of the lady operators, who were particularly generous in good wishes and their contributions. Autographs of all the contributors, amounting to nearly 200, rest in the baskets of the service.

The testimonial itself is one of the handsomest silver services ever gotten up. Solid silver, most elegantly engraved and frosted, with beautiful gold lining, the appearance of the service is strikingly handsome, and will constitute a lasting and imperishable memorial of the love and respect of friends and employees for a worthy and deserving man.

### The P. R. R. Suits.

The difference of opinion in this case is whether or not there is any binding contract in existence giving the Western Union exclusive rights or privileges on railroads controlled by the Pennsylvania Railroad Company, and lying within the State of New Jersey.

The merits of the case are so much involved that we can express no opinion in the matter, but prefer to wait and adopt the views of the court. One thing, at least, is certain, and that is, that the Pennsylvania Railroad had no intention of throwing off Western Union lines so as to turn the business into the hands of the American Union; it merely desired to collect the same rental from the Western Union, for similar privileges as it already obtains from other companies. The fact is that railroad companies which, years ago, accorded a certain privileges to telegraph companies on easy terms, have suddenly awakened to the fact that telegraphing has become an exceedingly profitable business, and one for which railroads can safely demand higher rents. The Western Union resolves to "pay no rent," and was, in accordance with the new order of things "Boycotted" by the railroad companies. It is understood that as fast as Western Union contracts expire with other railroads, a notice to remove their wires will be served, though the consolidation may make some difference in this respect, as in others.

### Let the Good Work Go On.

In response to a call issued in THE OPERATOR, to aid the widow of the late John G. Boyce, a subscription was started in Columbus, Ohio, the following gentlemen giving the amount set opposite their names, which has been forwarded to J. N. Ashley, New York:

WESTERN UNION.			
Geo. W. Irwin.....	\$0.50	Chas. Colwell.....	\$0.50
B. F. Conklin.....	50	F. P. Rens.....	75
W. H. Jones.....	50	Frank Carrell.....	50
H. E. Rawson.....	50	L. W. Boyer.....	50
Maurice Neil.....	50	C. W. Potter.....	50
Geo. Cole.....	75	C. W. Ross.....	1.00
Frank Coit.....	25	J. W. Haynes.....	50
ATLANTIC AND PACIFIC.			
John W. Cleary.....			50
AMERICAN UNION.			
D. L. Kaine.....	\$ 50	E. S. Brenimiller.....	\$ 50
Geo. K. Smith.....	50	T. C. Morton.....	50
RAILROADS.			
E. S. Rose.....	\$ 50	C. S. Wilkins.....	\$ 50
F. C. Smith.....	50	F. E. Whiter.....	50
J. W. Shepper.....	50	H. S. Bradley.....	50
Geo. M. Carter.....	25	H. O. Pond.....	50
Geo. F. Brown.....	1.00	D. H. Gard.....	50
G. F. Ramsey.....	50	M. P. L. Booth.....	50
M. J. Keenan.....	50	J. E. Blaire.....	50
Total.....			\$17.50

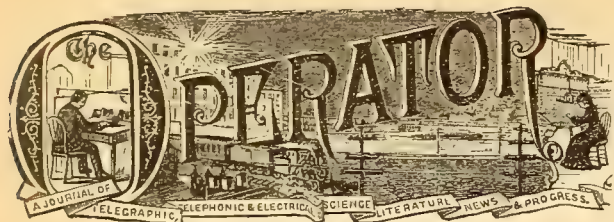
### Instructive as well as Entertaining.

"Telegraphic Tales and Telegraphic History," by W. J. Johnston, is a popular account of the electric telegraph, its history and the growth of our modern telegraph system, together with a great variety of authentic, illustrative anecdotes and stories relating to the telegraph and its uses. The book is an instructive as well as an entertaining one, very prettily made, and carefully edited by Mr. Henry G. Taylor, a New York journalist to whose skilled judgment and good taste the author pays a warm tribute in his preface.—*N. Y. Post*.

The dispute between the great philosophers of the telegraph as to the merits of wooden as against iron poles for city lines, reminds us of Sydney Smith's reply when his opinion was asked about the wooden pavement around St. Paul's. Wood is undoubtedly the better and cheaper material for the use of our managers; for, as Sydney Smith said, "Let the canons lay their heads together, and the thing will be done."

A Holtz machine, which can produce a 26-inch spark, has just been made in this city. The revolving plates are 45 inches in diameter. The *Scientific American* thinks it probable that this apparatus is the largest electrical machine of the kind ever constructed.





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W. J. JOHNSTON, Editor and Publisher.

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Subscribers desiring their addresses changed, should give the *old* as well as the new address.

### THERE SHALL BE ONE FOLD AND ONE SHEPHERD.

Once more the scratching of an astute financier's pen has shaken the foundation of the monetary circles of a whole continent. In our news columns to-day we announce with much regret the preliminaries of a tripartite agreement which seems to virtually put an end to telegraphic competition in America; and, owing to the right of way and multiplicity of contracts held by the existing companies, secures for the new monopoly an almost invulnerable position. The Western Union Telegraph Company, organized nearly 33 years ago, with a capital stock of only \$36,000, and which was marketed in 1861 for 30 cents, and its great rival, the American Union, which has not been open for business one year, have joined hands in forming, in conjunction with the Atlantic and Pacific Company, a monopoly unequalled in the annals of telegraphy.

We are disappointed in the action of the American Union Company, for the bottom has fallen out of it much more rapidly than its rosy promises led us to believe. It came to us and the public at large as the apostle of a new era in telegraphy. Its officers avowed, time and again, and we believed them, that consolidation was impossible. Its great battle cry was "Death to Monopoly," and its circulars and other advertisements teemed with announcements to that effect, and protestations of its fidelity to the public. One of its circulars concluded as follows: "We rely upon such patronage as will be profitable to the company, and emancipate the public from the exactions of a monopoly." Our respect for the reputation of human nature in general deters us from inquiring too closely as to the reason for this dissimulation.

Still, there is no reason why a monopoly, wisely and honestly managed, should not be as satisfactory to the public as the liveliest kind of competition; and, while we regret that opposition should have been so completely wiped out, we cannot but congratulate the newly-formed monopoly upon the auspiciousness of its commencement, notwithstanding that it thus adds ten millions of dollars to the aggregated capital without in any way increasing its telegraphic facilities.

The new combination will have a Sisyphean job in rooting out the dry-rot which has hitherto been the great drawback to success in telegraphy; and in commencing the reforms in the details of telegraphic management which are so palpably needed. In this respect it cannot do

better than adopt the policy laid down by the late American Union Company—if it is not too soon to say "the late"—a company which though barely a year old, has lived long enough to point out, if not to demonstrate, what *can* be done.

In one year it has—though by false pretences, as it would seem now—monopolized all that is shrewd and talented in telegraphic life, and has secured the best operators, as a rule, while, at the same time, it has done all that science and skill, properly remunerated, could do. Its worthy president set an aim for telegraphers, excellence, and, his subordinates becoming attuned to that single aim, and closely allied to each other, it resulted in a most effective and brilliant service. If the new company will now take up the lines of discipline and management where the American Union leaves off, they will meet with assured success.

It has not yet been announced who is to manage the new combination. Some of the newspapers speak of Mr. Gould for president, and General Eckert for first vice-president and general manager, but this is probably merely guesswork so far as the first is concerned. As regards General Eckert, it is doubtless correct.

However, in the light of past experience, and the limited number of persons to whom the selection must be restricted, the right man will not be hard to find. He must necessarily become the centre of many concentric circles, and will wield a powerful influence.

For operators the outlook is, we regret exceedingly to say, less bright than before. Two main offices will, on account of the heavy business, be maintained in this city, but a great number of competing offices will be closed in all the large cities throughout the Union. This will bring hardship to many a hard-working operator, but we must bow to the inevitable. We trust, however, that the various managers will make their selections judiciously, remembering those who have been faithful heretofore, and making the changes in such a delicate manner as to produce the least possible hardship. It is a fitting time, also, for the operators to show their good fellowship by helping the victims in every possible manner; and, by standing shoulder to shoulder in misfortune, prove that they can do so when other changes may require concerted action.

Now that the claims of Mrs. John G. Boyce have been revived, after three years of official inactivity, and a circular has been officially issued requesting payment of the claim, we hope to see it settled at once. But this is certainly the wrong way to do it, although it is better than the stupid policy pursued before Mr. Ashley took hold. The money should be paid, with interest, by regular assessment from the funds of the Telegraphers' Mutual Benefit Association; and, while we shall be glad to have it paid now by voluntary contributions, we hope in the future to see one regular assessment omitted, in return, and paid from the accumulated fund. We believe that if ever a widow had a good claim on an insurance policy, Mrs. Boyce has one; and we shall be glad, considering it a Christian duty, to surrender the space necessary to prove this, and to convince every one that all the brains in the telegraph business are not located in "official" heads. On the very day of Boyce's death, and immediately after hearing of that event, a leading official pounced upon the mare's nest. On that very day—the same day that Boyce died—although that official was a thousand miles from the scene, he wrote that "this thing looks

crooked;" and added, in alarm, "this is the third death in one month," intimating in an inferential way that such reprehensible conduct as dying at the rate of three a month on the part of operators, must be stamped out. From that day forward that man devoted what he believes to be his mind toward proving that it was "crooked." The usual set of petty understrappers attuned their instrument immediately, and for a whole year played second fiddle so effectually that better men were deceived, and the friendless widow was cruelly wronged. One irresponsible party wrote that Boyce "evidently had consumption;" another gravely asserted that Boyce "coughed a good deal;" every unthinking Tom, Dick and Harry had his theory; the sum total of it all being the apparent indorsement by an organization of honorable men of an act of official meanness that would, if properly explained, shame a Down-east Jew peddler. But, far and above all these dollar saving and extraneous opinions stood the *sworn record* of the attending physician, which proved as plain as daylight at a midsummer noon that Boyce did not die of consumption. We will leave for another occasion a denunciation of the incomparable avarice which prompted these same men to collect and retain two dollars, in assessments, from the almost penniless widow, *after Boyce had died*. We are in earnest in this matter, because it is likely to strike any one of us. Nothing comes nearer home to us than breaking faith with a fellow-worker after he dies, and depriving his children of the benefits of his thrift in life; and we hope that every member of the Telegraphers' Mutual Benefit Association, who belonged to that organization when Boyce died, Nov. 15, 1877, will now remit his dollar as promptly and cheerfully as though the assessment had been issued in the usual way. The principle must be established that, when you die, if there is doubt of any kind, the benefit of that doubt must be given to your sorrowing widow and the little fatherless curly-heads that are left behind.

We hope ultimately to see this same assessment paid from the reserve fund, thus relieving those who subscribe now from the payment of some future assessment.

THE Atlanta, Ga., *News* well describes Superintendent Brenner, of the Third Western Union District, as "one of the best and biggest-hearted men in the world." We have always believed that, and rejoice to see that the employés of the Third District recognized it in an appropriate manner on Christmas eve, a pleasant episode, which is cheerfully reported in another column. But there is one stain on that district which we have always hoped to see effaced. It was in the Third Western Union District—among Southerners—that John G. Boyce, a friendless Northern boy, died. They were officials of the Western Union Third District who asserted that John G. Boyce died of consumption, and thereby deprived his widow and orphans in the North of the amount of his insurance, notwithstanding that his attendant physician (a Southern man, too), *swore* that Boyce died of an entirely different disease; notwithstanding that Boyce never had a regular doctor in his life until he accepted night work in Florida; that up to within five days of his death he worked regularly the heaviest wire in the South, and that he had been an accepted member of the Telegraphers' Mutual Benefit Association and had paid his regular assessments for fifteen months. Superin-



tendent Brenner had no hand in that peculiarly heartless fraud; and, for that reason, in addition to our appreciation of his sterling merits as an executive officer, we rejoice to see him honored.

SINCE our last issue, we have been taken severely to task for asserting that we have "no opinions" to thrust upon others. We still maintain that it is not the function of THE OPERATOR to do the thinking, but only to give expression to the thoughts of the profession, and to stimulate its members to deep thought. We are aware that some men swear by what they see in print; that "the press is a powerful forming influence, pressing on men from every side," and all that kind of moralizing, but we have no desire to take advantage of any such weakness in human nature. Therefore, opinions expressed by us are not strictly our own opinions, but the thoughts and aspirations of the profession, reflected in our columns. When we fail to reflect those opinions correctly, there is a financial barometer which apprises us of that fact quicker than our esteemed critics can tell us; for, while no man can dictate to another what he shall write, every man can determine for himself what he shall read, and your wide-awake son of freedom will no more subscribe to an unworthy paper than he will associate with a disagreeable companion—for a good journal is a companion.

THE anniversary of the birth of Benjamin Franklin (Jan. 17, 1706) occurs the day after tomorrow. Born in the first decade, and ending his notable life in the last decade of the eighteenth century (April 17, 1790), his character will never cease to have a peculiar fascination for American telegraphers in particular, and scientists all over the world in general. Born in poverty, at a time when our peculiar science was just groping its way out of the darkness of centuries, "Poor Richard's" doings are matters of familiar history to all. For our benefit, he transmitted, in 1748, an electric spark across the Schuylkill River, at Philadelphia; and, June 15, 1752, demonstrated, in Philadelphia, a theory suggested by him years before, that lightning and electricity were the same, by drawing lightning from the clouds by means of a kite. Of his services to the new-born Republic, and as a statesman, it would be idle to speak, and we can only contemplate, with Byron, his noble character:

"While Franklin's quiet memory climbs to heaven,  
Calming the lightning which he thence hath riven,  
Or drawing from the no less kindred earth,  
Freedom and Peace to that which boasts his birth."

AT the recent destruction of the wall paper manufactory of M. H. Birge & Sons, in Buffalo, and the burning of ten employes, a little lad of 17, Patrick Tierney, assisted eighteen companions to escape from the fifth story, by means of a telephone wire, while another boy leaped from the fourth story to a pole-line below, the wires of which breaking let him down in safety to the ground. We commend these two incidents to the attention of those who object to telephone and telegraph wires as nuisances which should be placed underground or above the clouds. In these days of high buildings and selfish proprietors, who refuse to obey the laws of decency, and to provide suitable fire escapes, these "nuisances" may become of the utmost value as means of safe descent from burning buildings.

SOME of our advertisers request us to ask those writing them for catalogues, information, or

the like, to always write their full name and address distinctly. They say they receive inquiries which it is impossible to answer, on account of the indistinct manner in which the name has been written, or the omission of the State, and sometimes of the entire address. We, ourselves, are often caused much annoyance, or extra work, from this same cause. In writing on business matters, always give your name and full address plainly every time, and if prices have been quoted repeat them, and repeat the name of the article and all about it when you order. This will prevent the necessity of referring to your former correspondence.

As the telegraph authorities decline to be loquacious on the subject of the consolidation, our esteemed contemporaries of the country at large get terribly muddled in discussing affairs telegraphic. We find by a cursory glance over a host of exchanges that Dr. Norvin, Vanderbilt, President Jay Green and William H. Gould engineered the American Pacific Company's case, while the Union Atlantic Company boasted of the services of such giants as General Thomas T. Cornell, Alonzo B. Eckert and David Homer Twombly. Hamilton McKay Bates looked after the interests of the Western Rapid. There's nothing like being in the ring to get correct information about these affairs.

COMPLAINTS from all quarters are coming in concerning certain telegraph managers and operators making schools of their offices for the instruction of students, and turning an occasional penny in other ways connected therewith, while drawing salaries from the companies. For their benefit we quote the following extract from Western Union Order No. 171, dated New York, Oct. 30, 1877: "No employé of the company should engage in any other business, or accept any other employment without previously receiving the written consent of his respective district and general superintendent."

That order is only three years old, but it appears to have been frequently overlooked.

FORTY-THREE years ago (Jan. 24, 1838), the first telegraphic message by means of the dot and dash symbols—Professor Morse's alphabet, invented by Alfred Vail—was sent over ten miles of wire, in this city. On the following day, the *Journal of Commerce*, in speaking of the innovation, said: "Professor Morse has recently improved on his mode of marking, by which he can dispense altogether with the telegraphic dictionary, using letters instead of numbers; and he can transmit ten words per minute, which is more than double the number which can be transmitted by means of the dictionary." Things must have changed somewhat in the past 43 years.

It may interest some of our manufacturers of electrical supplies to know that a government monopoly can shut up their establishments with as little compunction of conscience as it can shut down on the hopes of shareholders who have invested their savings in seemingly paying private companies. Mr. Fawcett, the Postmaster General of England, has now discovered that the government can effect a saving by manufacturing its own instruments, in addition to monopolizing the telegraph. Shops have accordingly been established by the government, and henceforth "the Crown" will make its own telegraphic instruments.

THE French government has asked the Chamber for a grant of 300,000 francs to cover the expenses of the Congress of Electricians and the Exhibition of Electrical Apparatus, which will be held, next autumn, at the Palais de l'Industrie, Paris; and of which the readers of THE OPERATOR have already been fully informed. The Prince of Wales, who, like his illustrious father, the Prince Consort, delights to assist in the advancement of science, has been spoken of as the probable President of the Congress.

AN able and timely article on the Natural Enemies of the Telephone, by Mr. T. D. Lockwood, is published in this issue. In it our telephone friends will find much practical information on a most important subject, which has not hitherto been touched upon by any of our electricians. We are compelled to postpone Mr. Lockwood's usual installment of "Notes and Queries" until next issue, on account of the length of this special article.

A NEW journal, devoted to the subject of all kinds of instruments where great precision is required, was commenced in Berlin on the 1st inst., with the somewhat uneuphonious name of the *Zeitschrift für Instrumentenkunde*. It is controlled by a board of twenty-one editors, representing all the different branches of science. We wish the *Zeitschrift für Instrumentenkunde* much good luck.

OUR sympathies are extended to Mr. W. B. Clum, of the A. and P. Co., upon the untimely death of his eldest son, an exceedingly promising young man. Mr. Clum lost his wife about two years ago, his youngest child about a year ago, and now we are called upon to chronicle the death of his son.

THE Volta Prize, which was awarded by the French Academy, last September, to Professor A. Graham Bell, is 50,000 francs. It was originated by Napoleon I. for improvements in electrical apparatus, and has previously been awarded to but one person—Ruhmkorff, in 1848.

APPLICATIONS for space at the International Exhibition of Electricity, to be held in Paris, next autumn, will be received until March 31. No charge will be made for space, but those who will require steam-power must pay some fixed rate.

THE consolidation will demand the closing of a good many superfluous offices in about six weeks from now, and that action will create a number of wandering refugees. There is pith in the prediction, "Beware the Ides of March."

THE unfortunate operator who bulled the report of a congressional caucus so as to make it appear that they had a circus, was not, in the light of recent events, so very far astray in his instinct.

WHAT is the use of naming the new combination "Western Union?" As the last hope of opposition has fled for some time, why not call it "The Telegraph Company?"

WESTERN UNION stock is quoted at 110½, American Union at 90, and A. & P. at 47. Last issues were 78½, 71¼ and 34., respectively.

THE lamb has once more laid down inside the lion.



## Chicago Notes.

To the Editor of *The Operator*:

Sir: There have been but few changes here since last writing. One, however, has occurred which deserves particular mention. Mr. Robert H. Lord has gone to join his brother in the railroad business in Galveston, Texas, where he hopes by industry to place himself more speedily in the way of promotion and advancement. A hope and condition that few operators can rely upon with any flattering degree of confidence in the telegraph business, no matter how decided their ability, or how persistent their efforts. Mr. Lord has been employed here for the past five years; during the last year in taking the reports of the Western Associated Press from New York. He is one of the few equal to the task of manifold to the number of nine or ten copies and "putting it down" in a uniformly plain and beautiful hand-writing, never omitting the necessary punctuations. The W. U. Co. lose a very valuable operator, and the city printers will doubtless regret his absence. Mr. Lord is a gentleman of pleasing manners and excellent character. His Chicago co-laborers unite in wishing him unmeasured success, and commend him to the good-will and friendship of all with whom he may come in contact in his new field of operations. Mr. L. M. Smith has taken his place here as report operator, and is a good one in every respect.

The latest freaks of the telegraph in this section were in recording "Mrs. Sage recovered" for "message received," and, "a man kicked to death while burying a mule." Had the youth sending read the word currying, instead of burying, 'twould have appeared less an outrage upon the reputation of every living mule, as well as upon the memory of those who have kicked their last kick.

The Chicago Telegraphers' Ball Association have decided to hold their annual ball and banquet during the latter part of February. No pains will be spared to make it an enjoyable affair. The *Chicago Evening Journal*, in a recent issue, says of last year's ball: "It was the finest of the kind ever given in Chicago." The members of the fraternity in other cities are cordially invited to be present. The date of the ball will be given later.

INEWRI.

CHICAGO, Jan. 9, 1881.

## Long Island Railroad Notes.

To the Editor of *The Operator*:

SIR: We regret to state that Frank S. Gannon has severed his connection with the Long Island Railroad, and doubt if that company will ever be fortunate enough in again securing as faithful and energetic a man in their service. Mr. Gannon was a man who, by his hard work and skillful management, brought the Long Island R. R. out of chaos (although others, by a little manoeuvring, got the credit), and by his kind and generous disposition gained the love and esteem of every man on the road. He leaves behind him many kind remembrances, and has the very best wishes of all.

The offices of masters of transportation of main line and Atlantic division having been abolished, we are glad to see that Mr. M. W. Maguire has been appointed chief train dispatcher and train master, as, by his faithful attention to his duties, the promotion is richly deserved.

The company is to be congratulated in retaining the dispatcher's corps, as they, by their skillful and masterly work of last summer, reflected credit upon the company and themselves. The dispatcher's offices are to be consolidated at Long Island City, and are now as follows: M. W. Maguire, chief; D. Fonda, main line and branches; W. W. Griffin, Montauk division and branches; H. J. Quigg, North Side division and branches; D. H. Christie, Atlantic division; W. Hawkins, night dispatcher, with Messrs. Calkins, Callahan, Harris, Doyle and Kirk as operators.

## Boston Notes.

To the Editor of *The Operator*:

Sir: The Mutual Union Telegraph Company have taken an office at Room 26, Equitable Building. Dennison, of the New York Elevated Railroad Co., is with them; Richardson, formerly of Albany, and Hinds, are with the American

Union; Bradford, of the W. U., has gone with the Rapid; A. D. Skinner, of the W. U., has gone to Atlanta, Ga., for the Am. U.; Jim Crawford, of the W. U., goes to the Isthmus for the Canal Co.; McLean has gone to New Orleans with the Morgan R. R.; Willie Sampson Dewolf is adjuster of quads, W. U. Boston office. Tom Kelly has had his photograph taken; all the ladies are crying for it.

Weaver, of W. U., has gone to New Haven to take Associated Press. Dwyer and Donovan are at the old State House. Dickinson runs the Buffalo wire nights.

James Randall died Monday, Jan. 10, after an illness of three months. He was much thought of by his associates, who contributed the sum of \$100 for his benefit, and \$15 more for flowers, for decorating at the funeral ceremonies. Business has dropped off largely before and since the holidays. That, added with the prospects of consolidation, makes the boys feel that it's a "cold day."

U. KNO.

## Milwaukee Melange.

To the Editor of *The Operator*:

SIR: Your correspondent at this place lately spoke of the plug factory in the C. & M. office, but has kept silent on the subject of students in the N. W. office, which is why we rise to remark. Of course we can't object to the check-boys working up; many of us have risen from just such positions; but the idea of allowing students to practice on the wires, and even to receive and send important messages, is neither just to the profession nor to the patrons of the company. Some time ago a young Jew left the segar-making business and was allowed to practice in the office of that company. He was finally employed at a small salary (\$30 per month), and (so the story goes) in a week or so was discharged on account of a bad bull. Whether this latter is true we cannot say, but certain it is he has left telegraphy and gone back to his cheroots.

Another intelligent youth has been allowed to practice about here for several years past, and we are furnished with the following remarkable transpositions made in one night lately, at the excruciatingly invincible speed of five words per minute: "Kennononee" for "Kewaunee," and "G. C. Watteage, Chicago," for "G. C. Waldridge, Chatfield, Minn."

EXTERMINATOR.

## Hurry up, Edison!

Maxim is not the only man who is trying to get ahead of Edison, and the "Wizard's" Electric Light Company will probably not be the first to experiment on a large scale with the electric light in New York. Edison has promised to introduce his light in a down-town district immediately after a successful New Year's Eve illumination at Menlo Park, but the Brush electric Light Company is already erecting twenty-foot lamp-posts along Broadway from Union square to Thirty-fourth street, and the promise is made that the mile of electric lights shall be burning Christmas Eve. Has the public noted the fact that the price of lighting the streets with gas has fallen several dollars a lamp for next year? Somebody seems to fear the introduction of the electric light as a substitute for gas street lamps. Hurry up, Mr. Edison, if you expect to see your electric lamps, rather than a rival's, hanging in all the streets of New York. —*New York Mail*.

## Montreal Telegraph Company.

The annual meeting of the shareholders of the Montreal Telegraph Company was held at Montreal, January 13. The President's report states that during the past year a very large business has been done over the company's wires, and but for the reduction made last year in the rates of transmission, a considerably larger profit would have been realized.

The number of messages handled in 1880 was 2,112,101, an increase of 388,071 over the number handled in 1879. The increase in miles of poles for the year was 226; of miles of wire, 332; of offices (of which there are now 1,674), 55; of gross revenue (which in 1880 was \$550,840), \$72,404; and of expenses, \$23,012, showing an increase in the net profits for the year of \$49,302.

## TELEPHONE DEPARTMENT.

"Telephone" is of the feminine gender—it talks back.

The English Post Office authorities have just given an order for 20,000 telephones.

In Buffalo, N. Y., the Bell Telephone Co. and the A. D. T. are working finely together in double harness.

A would-be telephone expert writes to headquarters desiring to know the difference and relative values of a Graham Bell and an Edison telephone.

The Concord, Mass., State prison, twenty-five miles from Boston, is connected with that city by the wires of the Northern Massachusetts Telephone Co., which has established a number of telephone circuits in and around the State prison.

T. B. Doolittle, lately the proprietor of the Bridgeport Telephone Exchange, has accepted a position with the American Bell Telephone Company, and will for the present devote himself to the introduction of the telephone as a substitute for, and improvement on, the speaking tube.

President Dougham, of the Lowell District Telephone Co., is the "boss" superintendent of "telephone line construction." Under his supervision fifty poles recently went into the ground through twelve inches of snow and ten inches of frost. It is said "they will fall over in the spring."

Our Buffalo friends have leased the ground floor of a handsome iron building, corner of Washington and North Division streets, and will establish their executive offices there. When decorators and upholsterers finish their work it will be one of the handsomest and most commodious business offices in that city. Their new number will be 340 Washington street.

On Friday, December 30, 1880, Mr. C. H. Walton, manager in the office of the Metropolitan Telephone and Telegraph Company, was presented with a very handsome silver ice-pitcher and cup, by his co-laborers, as a mark of their esteem. Mr. Walton's monogram is engraved on the cup, and on the pitcher are the words, "Presented to C. H. Walton by the Employés of District number one."

The Bell Telephone Co., of Buffalo, is fast outstripping the municipal telegraph system, as a means of giving quick alarms to the Fire Department. Five times in one week of December last it summoned engines to burning buildings, either by telephone or the A. D. box, before regular alarms could be sounded; thus helping to save a large amount of property, and preventing the rush and confusion which always follows a regular alarm—the *bête noir* of the fireman.

The application for a mandamus in the suit of the American Union Telephone Company vs. the Bell Telephone Company to compel the latter to put telephones in the offices of the former company at Harrisburg, Penna. (reference to which was made in our last issue), came up at Harrisburg, on the 5th inst. After hearing argument, the Judge took the matter under consideration.

It might be interesting for some telephone men to know how much cold weather a Leclanche battery will stand and work without freezing. The Harrisburg (Pa.) Exchange have a telephone in a blacksmith shop where there is only a little fire during the day. The battery is in a tight, small box, with no packing. They also have a telephone at a railroad depot where there is no fire. The battery is in a small box, then packed in a box of sawdust. These telephones work right along with the thermometer down to five below zero, and seem to work as well as those in a warmer place. The batteries do not freeze.

Pat Carrigan connected his best ear with the telephone at the Mayor's office yesterday, when he heard a conversation between the Irish captains at two certain station houses. As soon as a lull came in the social chat Pat broke in with:

"You're an Irish pig."

One of the captains, thinking the talk came from the other, responded, "Tut, tut, mon; I tot I was conversin' wid a gintleman."

"You're sthinker," said Pat.

"I'll converse no more wid the loikes of ye," said the indignant captain.

Soon afterward the other captain explained



that he did not use the insulting language, and the pleasant chat was resumed. By this time the Mayor took charge of the instrument and overheard what follows:

"Have ye had any whiskey the day?" said Captain Michael.

"Not a drop; have you?" answered Captain Dennis.

"Two drinks of as fine a stuff as ye would find in a day's travel."

"Where did you get the drinks?" asked his Honor, the Mayor.

"At Bob's, up at the corner," answered Mike.

"You may consider yourself suspended for ten days," said his Honor.

And then a solemn stillness reigned in the region of the two station houses.

## SCIENTIFIC NOTES.

The magnet, as a means of mitigating pain and curing disease, is again seriously submitted to the consideration of specialists.

The English Government has ordered from the Brush company an enormous electric light equal to one hundred thousand candles. The largest made thus far is one of thirty thousand candle-power, now used in lighting up Wabash, Ind.

Prof. Graham Bell has been endeavoring to apply the photophone to the study of such sounds as may occur at the surface of the sun. This extension of the use of his late invention was suggested by M. Janssen. As yet, Prof. Bell has not secured very striking results, but he has obtained enough to warrant further efforts.

It may interest studious "test operators" to know that the intensity of atmospheric electricity, which under ordinary circumstances is always positive, is by far greater and more uniform during the night than during the day. From 9 o'clock P. M. until 3 o'clock A. M., it varies but little; it decreases at sunrise, reaches its minimum against 3 o'clock P. M., rises again rapidly, and attains its maximum at about 9 o'clock P. M. The amplitude of the daily oscillation is much smaller during the winter than during the summer months.

A patent, or "reissue," has just been granted to Mr. E. Berliner for the use of an induction coil with battery telephone transmitters. The claim covers broadly the use of an induction coil, in combination with a contact transmitter, or microphone, the primary short circuiter, with a battery, and the transmitter and the secondary proceeding toward the distant station. The patent is a reissue of his patent of Jan. 15, 1878, and has been assigned to the American Bell Telephone Company.

## DASHES HERE AND THERE.

Well posted—A telegraph line.

A dispatch from London says that Siemens, the cable manufacturer, is now running his works night and day to complete the new Atlantic cable for the American Union Company.

Mr. Preece, President of the British Society of Telegraphic Engineers, deprecates the plan for using the electric light in mines. He says the idea of the absolute safety of the electric light is a popular delusion.

The London *Court Circular*, having heard that Edison, as a means for producing incandescence, uses infinitesimal shreds of bamboo, procured at a great expense from Cuba, suggests that this new light should be patented under the title of "Edison's Electric Bamboozler."

Mr. O. W. Eisenhart was operator and agent on the M. and S. branch of the P. & R. R.R., at Excelsior Station, Penna. Patrick O'Brien went there on New Year's day to tell Mr. Eisenhart that "I am as good a man as you are." A row ensued, during which Patrick was shot and killed by the operator.

JAN. 8.—A. U. Manager to W. U. Manager.

"Good morning. How's the W. U.?"

"The W. U. is going to the d—l. How is the A. U.?"

JAN. 13.—W. U. Manager to A. U. Manager.

"Good morning. How is the A. U. to-day?"

"The A. U. has GONE to the d—l, sure; you have got us, after all."

The National Telegraph held its annual meet-

ing at Manchester, N. H., on the 28th ult., and elected the following named officers: Directors, Frederick Smyth, Col. John B. Clarke, George B. Loring; Clerk and Treasurer, Charles H. Bartlett; President, Frederick Smyth. A dividend of 5 per cent. was declared.

At the beginning of last month the Eastern of France Railway Station, Paris, was illuminated by the Lastin system of electric lighting. After having received a fair trial in the goods station, the electric light has also been adopted in the passenger station of the Lyons & Mediterranean Company.

Mr. Nicholas, an electric light engineer, has had a narrow escape from death, in England, by getting too familiar with the wires connected with the dynamo machine. He could not, of course, withdraw his hands, but as he fainted away the weight of his falling body tore him forcibly from the machine, and his life was saved.

Articles incorporating "The American Stock and News Telegraph Company," with a capital of \$1,000,000, have been filed at Albany.

The Pioneer Telegraph Company, with a capital of \$1,200, but with a proviso that the capital may be increased to \$1,000,000, has also been incorporated at Albany. Virgil W. Blanchard and others have also filed articles incorporating the Blanchard Electric Light Power Company, of New York, with a capital of \$1,000,000.

A watchmaker at Copenhagen is reported to have made a watch which requires no winding up, inasmuch as it performs that work by itself by means of an electric current. An electric magnet fixed inside the watch keeps the spring perpetually in a state of tension. All that is required to keep the watch going is to preserve the battery in proper working order, for which purpose one or two inspections in a twelvemonth are said to be sufficient.

A dispatch to the *World*, on the 2d inst., says: "The rumor that Mr. Gould intends to establish a new press agency for the transmission of special cable letters between the two countries excites not a little interest here, especially in journalistic circles, and further information is awaited with decided curiosity. The English press is at present very badly served with cable news from New York, and almost any change that could possibly be devised would be a change for the better."

Mr. A. J. Driver arrived at Galveston, Texas, on the 4th inst., en route for Brownsville, where he was to take charge of the Texas department of the Mexican Telegraph Company. This line will run from Brownsville to Brazos Santiago, whence a cable is to be laid to Tampico; thence to Vera Cruz, where connection will be made with a line running to the City of Mexico. Mr. Driver says the cable boats are on their way, and that the line is expected to reach completion in about a month. The line will connect with the Western Union lines at Brownsville.

This was the way in which Patrick O'Brien sent his Christmas greetings, after a seasonable spree:

"ALBANY, Dec. 23.

"Miss Mary O'Brien, Binghamton:

"Tired of living. Got razor in my pocket. Will cut my throat. Good-bye. You will not see me any more.

P. O'BRIEN."

The operator had sense enough to send out for a policeman and have Patrick locked up until he recovered from the effects of the gin.

The City Commissioners of Sewers, London, have recommended that the Anglo-American Electric Company light (the Brush system) be tried for a year in one of three districts of the city at an outlay of £1,410. For a second district the Electric and Magnetic Company's light (the Jablochkoff system) was recommended, at a remuneration for the same of £2,930. For a third district it was also recommended that the Siemens Brothers be paid £2,726, so that for twelve months a trial may be had of the Siemens light there.

The Norwegian coast is girdled by 1,200 miles of telegraph wire, and telegraph stations are established on the barren rocks of the Lofodden Islands, and in the hollows between the dark precipitous cliffs that form the Arctic face of Europe, for the sole purpose of warning fishermen of the approach of shoals of fish.

Here, among the screaming seabirds, a watch is kept of the movements of herring shoals, and particulars concerning their progress are flashed to the little settlements of hardy Norsemen who live by the harvest of the Arctic and sub-Arctic ocean.

The experiment of lighting the Hoosac tunnel by the electric (Brush) light was tried on the 22d ult. In parts of the tunnel free from smoke the light was thrown strong enough to do track work over 500 feet away, and driving spikes and shoveling 1,000 feet off. Between the central shaft and the east portal, where the smoke was so dense that an ordinary locomotive light would not be visible 10 feet away, the electric light could be seen for over 100 feet. In some parts of the tunnel one could read by the electric light 250 feet from the car. Engineer Locke was well satisfied with the experiment.

Professor Matthieson, after trying a great many experiments, has given us the following list of materials which resist the current of electricity in different degrees. The best conductor is named first, and the other substances in the order of their conductivity, the best insulator coming last: Silver, copper, gold, zinc, platinum, iron, tin, lead, mercury and the other metals; carbon, acids, saline solutions, sea water, rarefied air, melting ice, pure water, dry ice, dry wood, porcelain, dry paper, wool, silk, glass, sealing wax, sulphur, resin, gutta-percha, India rubber, shellac, paraffine, ebonite and dry air.

The French Government, on the 10th ult., laid on the table of the Chamber a demand for a grant of three hundred thousand francs in favor of the forthcoming International Electricity Exhibition and Congress at Paris. The Government points to the patriotic sentiments with which the subscribers of the guarantee fund are animated, and begs the Chamber to participate in a work which must prove most valuable to the advancement of a science which has lately made such rapid strides, and which promises to render such great additional services to the whole civilized world. One hundred and fifty thousand francs are applied for in favor of the exhibition itself, but the Government, wishing to keep the direction of the Congress in its own hands, asks for another one hundred and fifty thousand francs to cover all expenses.

A special dispatch from Omaha, Neb., says: "During the last twenty-four hours a singular atmospheric phenomenon, known as the annual electric storm, has been raging between Omaha and Ogden. During that time the telegraph wires have been useless through that region. The storm was accompanied by snow and high winds over 800 miles, between Omaha and Green River. The intensity of the storm is shown by the fact that when the telegraph key was opened by the operator a steady electric light burned at the connecting points. It is now practically over, and the wires are again open. L. H. Korty, chief operator of the Union Pacific Telegraph lines, has kept a record for years, and with but one exception in twelve years, this storm occurred on the 5th, 6th or 7th of January. It is believed that the entire Rocky Mountain region is visited by them. These storms have attracted the notice of electricians and scientific men generally."

## NEW YORK CITY ITEMS.

Echoes from 195.

Mr. Joe Fenn has been appointed assistant general circuit manager of the W. U. lines.

Several of the 195 operators are enjoying vacations, a large force and slack business admitting of their absence.

Messrs. Frank Glidden and Wood, from the Duxbury cable office, have been transferred to 195 until the cable, which is broken, is repaired, probably late in the spring.

The splendid working system recently introduced into 195 Broadway by Circuit Manager Jones, stamps him as being one of the most competent telegraph men in the country.

The new American Union line, New York to New Orleans, via Richmond and Augusta, has been opened for business. New York works direct with New Orleans without repeaters.

A party, numbering about twenty, from the operating department, indulged in a sleigh ride



on the 11th, driving from Brooklyn to Sheeps-Head Bay, where dancing and a fine supper were indulged in.

A rule of the office prohibits an operator from making an "extra" day's salary two days in succession. Operator "Fresh" succeeded in getting seven extra days into five regular days and barely escaped a lay-off until the extra was reduced to what is considered reasonable.

Mr. Brandell, known to the country at large as the "Fly Sender," has finally realized that operators are not like poets, said to be "born, not made," and is enjoying a rest from the imposition that pretended friends put upon him, in flattering him into the belief that he was the fastest sender in the world.

The boys on the St. Louis end of the duplex were in a fever of expectancy just before Christmas, when informed that a prominent stock broker had requested that their names be given him. Bronson thought it good for \$20. It subsequently transpired, however, that the broker asked for their removal for delaying his business.

"Chief Message Clerk" Stephenson's appearance in "full dress" the other day was thought by some to be the initiatory step toward uniforming the chiefs, a proceeding that would work well enough on the day force, though at night the operators should be uniformed, in order to designate them from the predominating number of chiefs.

On the first of the month the names of operators who have made the highest average during the preceding month are posted on the bulletin-board, an act which would induce school boys to great exertion. Some unconsciously have their record posted, but other instances are known where old operators take no supper hour and show a decided partiality for short messages, and thereby succeed in enrolling their names at the top of the list.

The New England Press Association has leased No. 4 wire between New York and Boston. The association agrees to pay the Western Union Company an annual rental of \$15,000 for a period of three years, besides paying all the working expenses. The superintendent of the leased wire is Mr. E. L. Beard, of the Associated Press office, Boston. The following are the stations and operators on the circuit: New York, Thomas H. O'Reilly and Ed Morton, day and night, respectively; in New Haven, Mr. Weaver (day only); Hartford, Cooke and Nihan; Springfield, Taylor and Miller; Worcester, Ryder and Wheaton; Boston, Kettles and Griffith; Providence, Ingraham and Bogle.

## PERSONAL.

E. Bear, W. U., Orange C. H., Va., has given up the telegraphic business.

E. P. Wilkins, from Burks, Va., has been transferred to Orange C. H., Va., Mid. R. R. Co.

H. C. Woodward, night operator Va. Mid. R. R. Co., Manassas, Va., has been transferred to Burks, Va.

Mr. A. D. Brewer, late of the W. U., has been appointed manager of the American Union office, Springfield, Mass.

J. W. Savage has resigned his position in Alexandria, Va., and accepted one with the B. & P. R. R. Co., at Odenton, Md.

Mr. W. J. Philips was, on the 6th inst., re-elected superintendent of the Philadelphia Police and Fire Alarm Telegraph for three years.

Mr. W. J. Curtis of fast-sending fame, shortly leaves North Sydney, C. B., for New York. Mr. Norman Sears, also of North Sydney, is now in New York.

J. C. Gentry, A. & P., Washington, D. C., has resigned, and returned to Gordonsville, Va., where he will act as cashier for the C. & O. R. R. Co., and practice law.

Mr. William D. Black, for many years one of the most reliable operators in the Western Union service at Philadelphia, has resigned, and joined the American Union office in the same city.

Messrs. J. Frank Howell, St. Louis Mo.; H. H. Kennedy, Toledo, and C. E. Russel, Muskegon, Mich.; spent Christmas week with their many friends in Grand Rapids, Mich., where they are always welcome.

Mr. C. E. Jones, of the firm of C. E. Jones & Brother, the well-known Cincinnati electricians and manufacturers, was married, Dec. 30, to Miss Maggie Welsh, daughter of Mr. and Mrs. P. J. Welsh, of that city.

The night-report operator in the Western Union office at Wilkes-Barre, Pa., is named Rush Jameson. Some of those who attempt to work with him think that "Rush" is a most appropriate name for a fast operator.

The telegraph office at Rockland, Me., is in charge of the ever pleasant and popular Mrs. A. I. Mather, with Miss R. Treet as assistant. The telephone exchange is in charge of Mr. W. A. Belcher, with Mr. A. D. Helm as chief.

We hear from Portland, Maine, that Mr. Henry Stevens, a much-respected Western Union repairman, is dangerously ill with paralysis of the throat and stomach. The doctors express fears that he must starve to death, as even milk cannot be forced down his throat.

At the Continental Hotel, Philadelphia, on the 27th ultimo, Mr. Warren D. Paynter, of the Bell Telephone Company, at Pittsburgh, was married by Rev. P. S. Henson, to Miss Fanny N. Terry. The ceremony was performed in the presence of a large number of personal friends of the bride and groom.

Mr. Sam. E. Watson, Grand Rapids, Mich., is one of the happiest ex-operators and telephone managers in the West. 1881 gives him the first increase in his family; it's a girl. Friends congratulate the house of Watson very heartily, wishing the compliments of the season and "many returns."

Mr. Geo. E. Holbrook, manager and test operator for the Erie Railway at "Hu," Jersey City, N. J., resigned, Dec. 31, to accept the position of superintendent of telegraph of the New York City & Northern Railroad, an excellent appointment. Mr. T. F. Mitchell succeeds Mr. Holbrook at "Hu."

The Atlanta (Ga.) American Union force consists of Messrs. J. W. Burton, manager (and a better one could not be selected); George Dalton, from the Western Union, Boston; E. E. Williams, W. U., Savannah and Col. William Sidney Stevens, from Griffin, Ga. The coming artist is Mr. Skinner, from the Boston Western Union office.

Mr. Frank W. Sabold, the genial manager of the American Union office at Indianapolis, was surprised on Christmas Eve, by the presentation of a gold-headed ebony cane. The presentation was made by Mr. W. T. Ward, on behalf of the employés of the office—Messrs. Ward, Carlile, Raper, Brooks, Thirkield, Dunn, Sherver and Breeding. Mr. Sabold acknowledged the testimonial in a happy little speech.

Mr. J. Levin, manager of the Western Union office at Atchison, Kansas, was the recipient of a Christmas present, in the shape of an elegant gold-headed cane, from his associates and admirers. Mr. Levin is one who has earned his epaulettes in our profession; and this unexpected recognition of his merits, by those who have to deal with him, is the best evidence of his popularity, talent and tact.

Mr. A. W. Clum, the son of Assistant Chief Operator Clum, of the A. and P. office, this city, was knocked from a car on the Pennsylvania Railroad, at the high bridge near Princeton, N. J., on Christmas morning, and was instantly killed. He was employed as a brakeman on the road, and was on his way home, intending to spend the day with his family, who were waiting when the news of his death arrived. Deceased was 24 years old and was to have been married in the spring.

On Christmas eve, the residence of Portland's well-known manager, Mr. C. D. Livermore, was invaded by the members of his (Western Union) staff, who, in the most unexpected manner, presented him with an elegant easy rocking-chair, Mr. H. A. Black making the presentation speech. Mr. Livermore, who was thoroughly surprised, replied as well as he could in an extempore manner. Mr. Livermore is deservedly popular with his staff and the great number of men who have worked for him in times gone by, and we are sure that no compliment, coming from such a source, can be too great for such an exemplary manager.

A TRIP OUT FROM ATLANTA, GA.—Taking a

trip out from Atlanta, on the W. & A. R. R., we meet the smiling face of Mr. R. H. Marchman at Marietta. At Dalton we see Mr. G. W. Anderson, and a few miles further on, at Tunnel Hill, we meet Mr. C. A. Hunt. Returning we branch off from the main line, and see Mr. Milton Orr, at Rome, always cheerful and always ready for business. Going toward Montgomery, we find Messrs. W. H. Handley at Newnan; W. J. Ragsdale at La Grange; P. H. Hammock at Shorter's Station, Ala.; E. Culp at Opelika, Ala.; S. H. Hill at Salem, Ala., and C. A. White at West-point. They are a good set, and always ready and willing to accommodate and favor the brethren.

U. S. SIGNAL OFFICE AT WASHINGTON.—Mr. J. H. Robinson is chief operator, and looks to everything pertaining to the circuits in first-rate style, but his special pride is the U. S. Coast Line, which, being constantly in trouble, gives him plenty of employment. The operators are: Mr. Charles O. Pierson, who has lately been duplexed, and now makes it warm for "N. Y." nights. Mr. John (better known as Jack) Fields makes a magnificent copy, and works extra for the American Union at the Capitol. Mr. George A. Smith is another gilt-edged copyist. Mr. William Spedden is one of the best natured fellows in the world. Mr. Harry Painter does not like to be hurried—he says it breaks him up. Mr. F. H. White is a young operator, but improves fast. Mr. L. C. Porterfield, who worked at "S. O." while the others were taking their vacation, has been promoted to Fort Whipple ("the seminary," it is called) to finish his course in meteorology. Nearly all those mentioned are old hands at the business, but entered the Signal Service during the depression, when salaries were down, and would now give the hair off their heads to get out again.

THE BURLINGTON AND MISSOURI RIVER RAILWAY IN NEBRASKA.—This road operates over 900 miles in Nebraska, and is rapidly extending toward Denver, Colorado. The telegraph department is ably managed by Supt. Yates, at Lincoln, assisted by Mr. Thomas McAlpine (our fast man) and Mr. Smith, the terror of the Republican Valley division. Mr. J. O. Phillippi (formerly with the C. B. and Q.) is assistant superintendent. At Plattsmouth, Mr. Ed. Gerrans is manager, assisted by "k s" and "S. R." The general office at Omaha is run by Little George (slow, but easy, and never put under the table). The present terminus of the R. V. Division is Indianola, where Mr. J. C. Swartz is agent and operator, assisted by Mr. Richard Storey, vice John Kenyon, who went recently to Kearney. There are only two trains a day west of Red Cloud on the R. V. Division, which gives the boys an easy time. Mr. Campbell, superintendent at Hastings, must have thought so when he started the stove-polishing outfit to polish their bald-headed stoves. "X d" man thought so, too. A subscription list for THE OPERATOR, which has been started along the road, is expected to receive great accessions when it reaches Woods and Gilbert, old-timers at "H N." N.

## BORN.

WILSON.—At North Sydney, C. B., Dec. 29, to L. W. Wilson, cable staff, a son.

HOADLEY.—To Mr. Edgar R. Hoadley, Jr., day operator and express agent I. M. R. R., Charleston, Mo., a daughter.

## MARRIED.

PARR—VAIL.—At Clinton, Conn., Dec. 21, 1880, by the Rev. J. H. Bliss, Mr. Charles H. Parr, acting manager A. U. Tel. Co., Albany, N. Y., to Miss Carrie I. Vail, of Clinton.

GLENN—WILLIAMS.—Nov. 15, 1880, at Baltimore, Md., by the Rev. Isaac Canter, Mr. J. A. Glenn, operator A. & P. office, Baltimore, to Miss Emma Williams, of Poughkeepsie, N. Y.

## DIED.

WILLIAMSON.—Of consumption, December 28th, Miss Anna W. Williamson, of the A. and P. main office in this city.

CLUM.—At Princeton, N. J., on Christmas day, 1880, A. W. Clum, son of the assistant chief operator in the A. and P. office in this city.



# “23.”

## EVERY

### ENTERPRISING TELEGRAPHER

#### SHOULD HAVE THE

## EMBLEMATICAL

# “Operators’ Card.”

I wish to call the attention of every operator throughout the country to a card, which is a carefully studied design, and which is giving excellent satisfaction wherever circulated. It is

### A MODEL OF NEATNESS,

Having different tints and styles of corners, and a gold beveled edge. Across it, in colored ink, is a beautiful representation of

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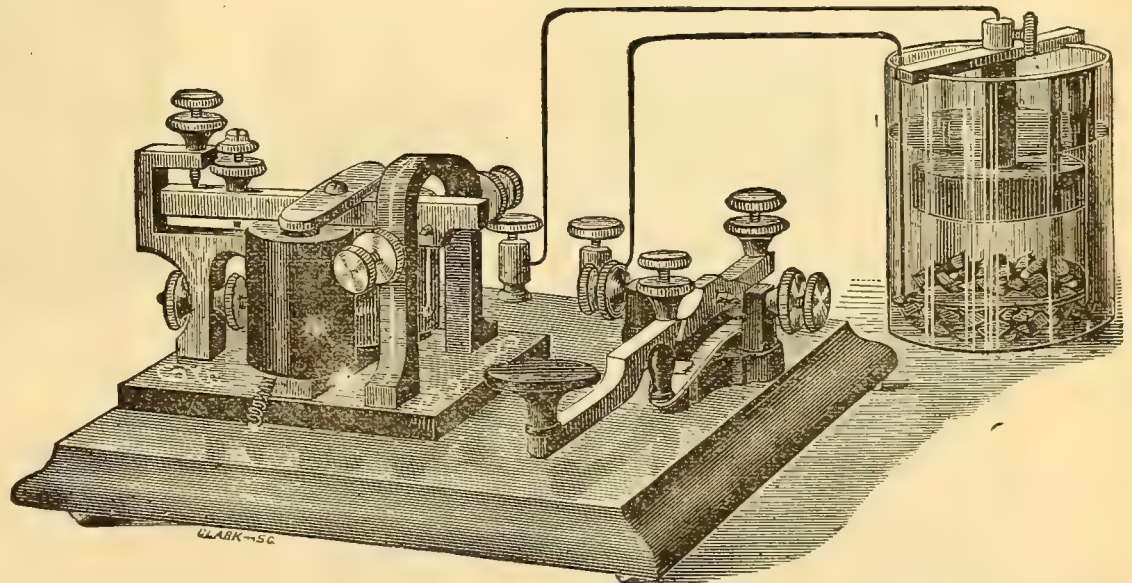
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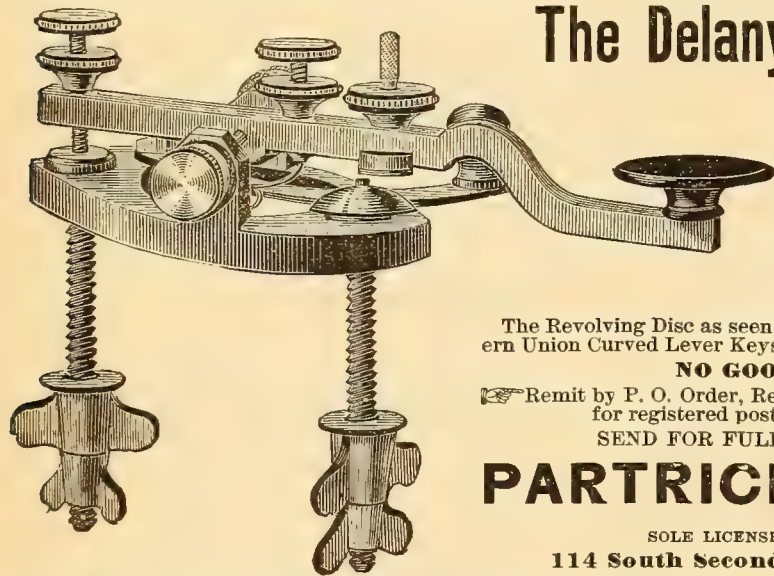
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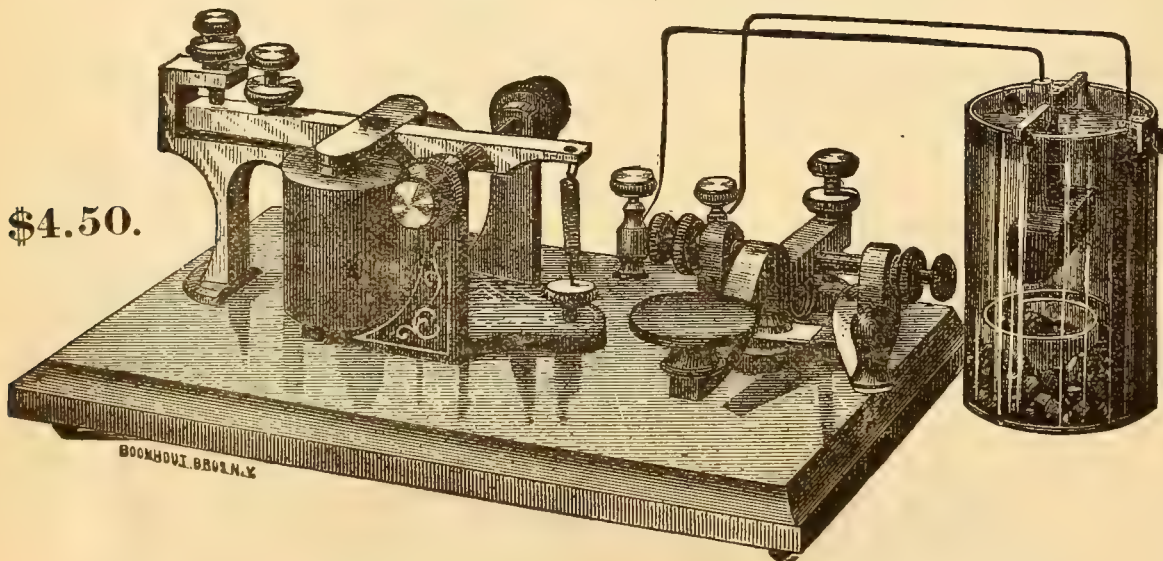
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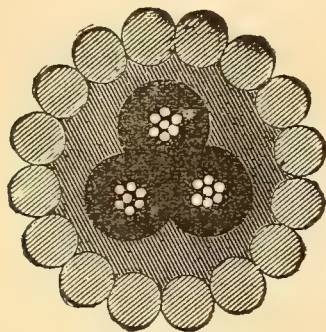
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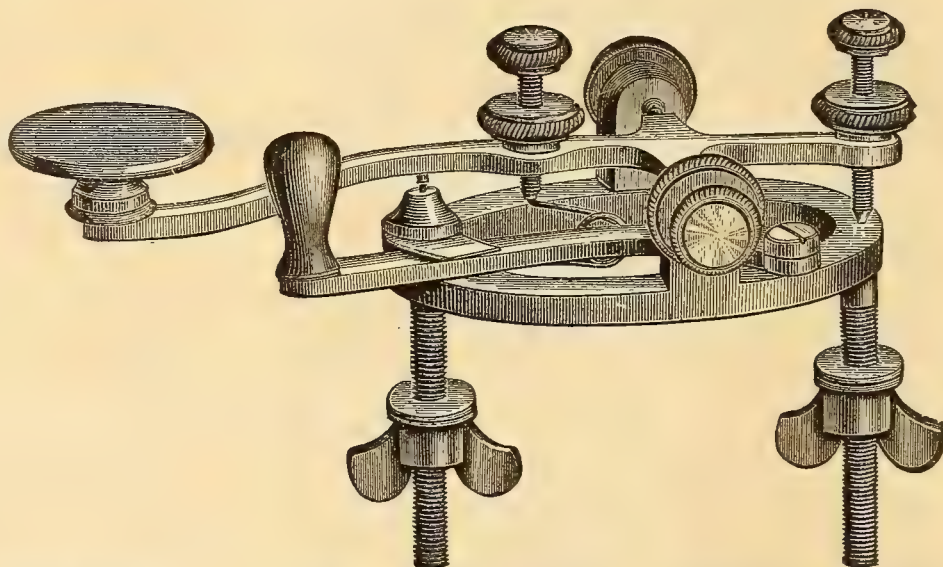
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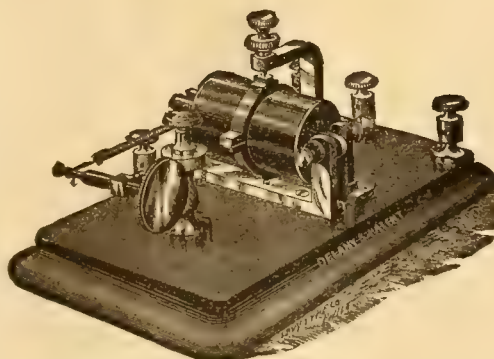
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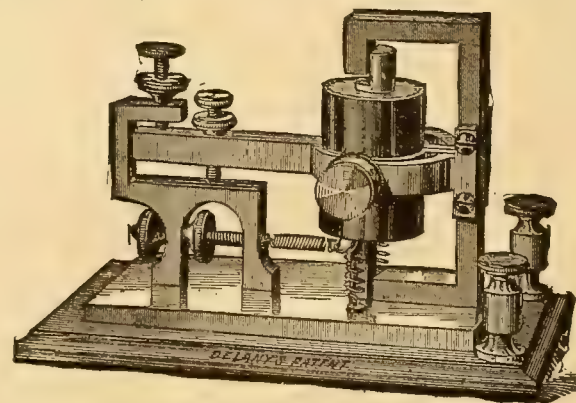
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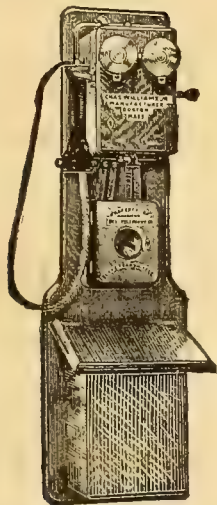
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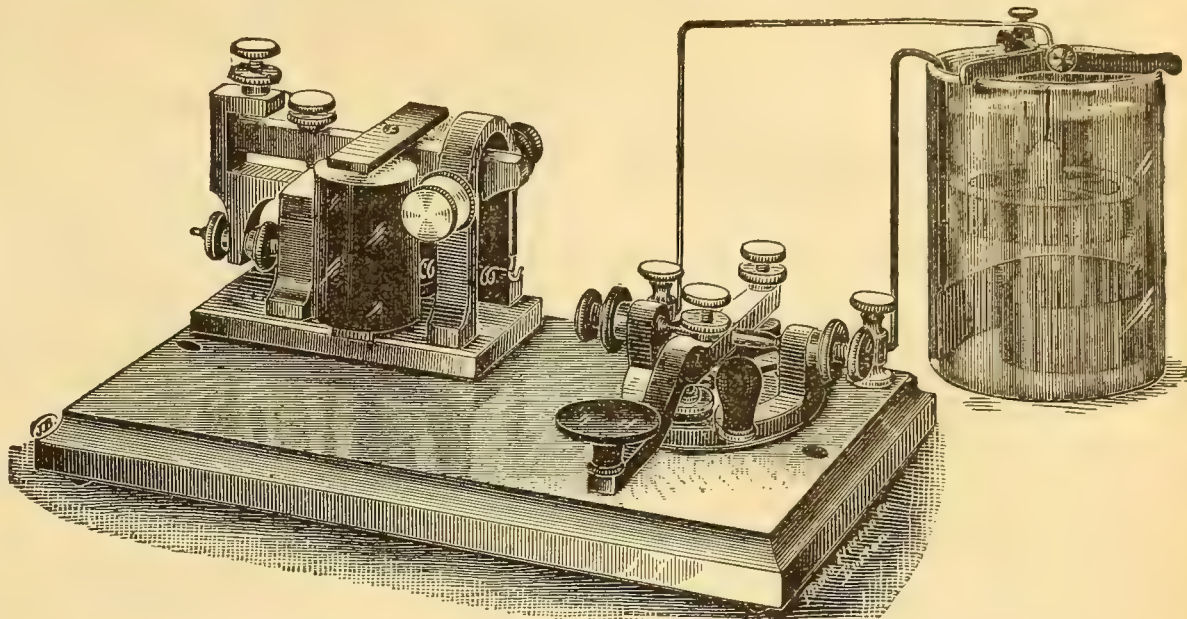
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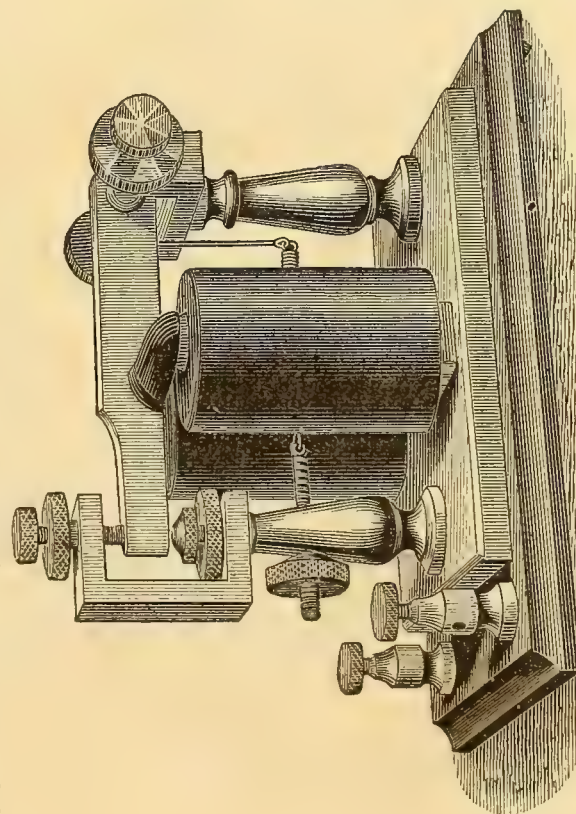
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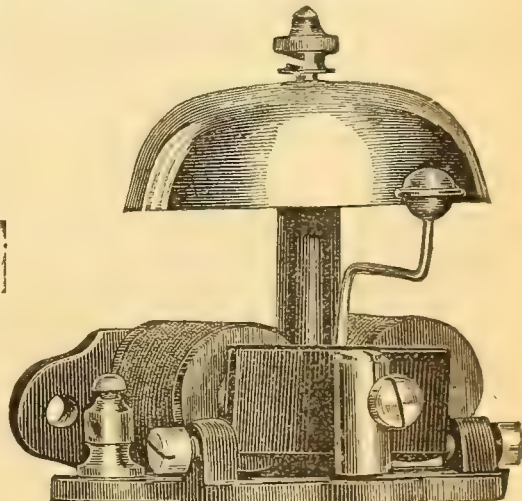
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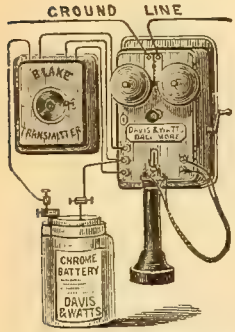
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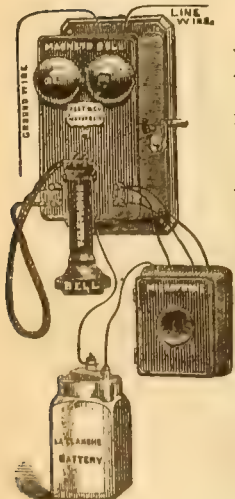
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**Insulated Telegraph Wire,**  
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**Universal Switch Sections,**

in perfect order, many of them never having been in use.

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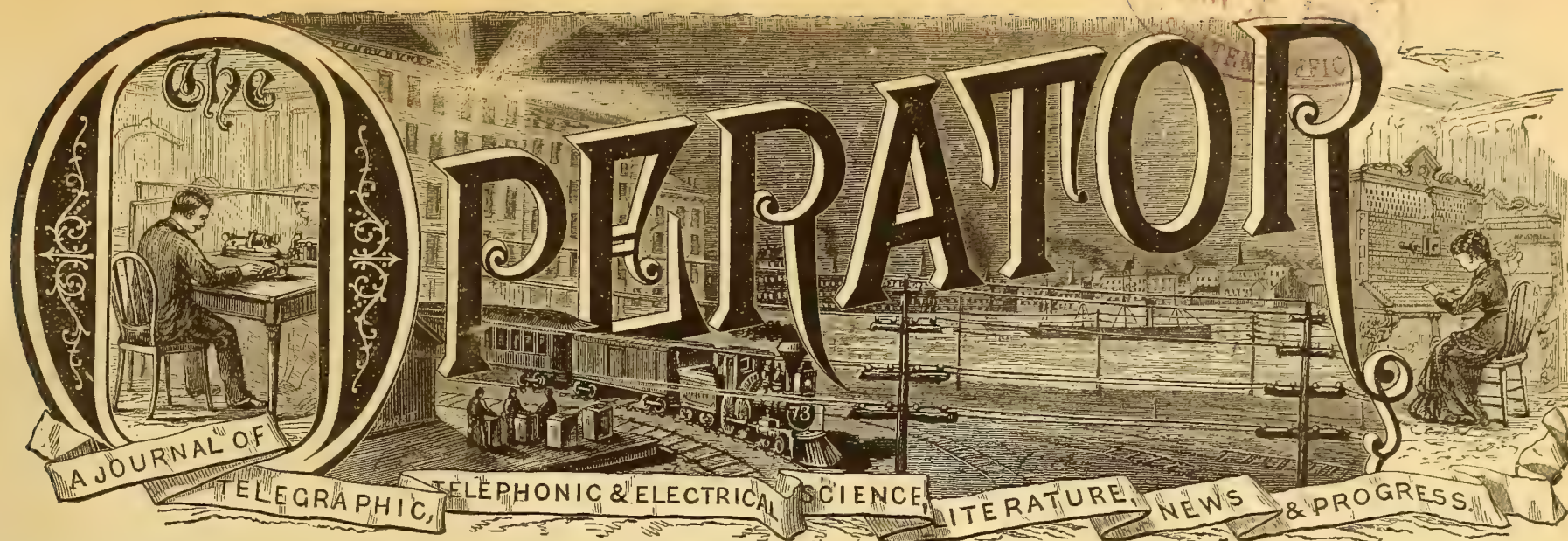
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VOL. XII.—No. 3.

NEW YORK, FEBRUARY 1, 1881.

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5 CENTS PER COPY.

### CONSOLIDATION.

"Once on a time"—a time of dread,  
With wages low and hope departed—  
Along the line the tidings spread,  
"A rival company has started."

The infant soon developed strength;  
Not long was it an infant rated;  
And when the poles were raised at length,  
Our hopes were also elevated.

From pole to pole the wires were strung;  
Silenced was every doubting Thomas;  
And loudly were its praises sung—  
Believed was every golden promise.

And still it rapidly progressed,  
Proving itself a mighty rival;  
In North and East, and South and West,  
With surest prospects of survival.

When, suddenly, in skylight clear,  
The thunder rolls—the lightning flashes—  
At once with dire dismay we hear  
A crash among the dots and dashes.

The one we trusted now is lost  
In a gigantic corporation;  
Our trust was vain—our hopes are crossed  
And blasted in Consolidation.

CECIL.

### Our National Portrait Gallery.

#### III.

WILLIAM DEAN WEST, OF NEW ORLEANS.

The worthy subject of this sketch, Mr. William D. West, was born of English parents, near Bridgeton, New Jersey, Jan. 26, 1851, so that he has just completed his thirtieth year. When three years old he was taken to Wisconsin and was brought up on a farm, receiving an ordinary country school education, until he was 14 years of age. At this time he began life for himself, and, like Mr. Edison, commenced as newsboy on a railroad—the Milwaukee & Prairie du Chien road. In one year he had learned the art of telegraphing, and from 1865 to 1868 he had charge of several small offices on that road. Like most young operators at that time, Mr. West drifted out to that telegraphic Mecca, the Union Pacific Railroad, and in 1868 was at Spring Creek, Nebraska. After remaining a year on the Union Pacific, he joined the Western Union service, and worked successively at St. Joseph, St. Louis, Shreveport and New Orleans. He then transferred his services for a brief period to the Pacific and Atlantic Co. at St. Louis, but returned, in 1872, to the Western Union office at New Orleans, where he was married and has since remained. As Mr. West has

become renowned as a fast operator, it would scarcely be worth while to specify particular cases; but it may be an appropriate time to recall the historical fact that it was in New Orleans, in 1873, that he received, over a continuous

The Consolidation Assured—Progress of Negotiations—The Temper of the Public.

On Wednesday, Jan. 17, the Western Union, American Union, and Atlantic and Pacific Telegraph Companies were practically consolidated



WILLIAM D. WEST.

wire, from New York, Mr. George Eitemiller sending, 100 red messages in an hour and forty minutes, there being repeaters in at Pittsburg, Cincinnati and Memphis.

In social qualities Mr. West is fully equal to his professional reputation as an excellent telegrapher, and we consider him as among that little circle of operators which will be heard from again at some time in the near future.

by the votes of the various boards of directors.

It is safe to say that no telegraphic change has ever created so profound a feeling throughout the country. It has raised the hopes of a good many of the smaller and embryo companies, for the bare fact that the American Union had been practically built up within a year gave a ray of hope to which many people cling like a drowning man to a straw, forgetting the fact that all the



available rights of way are so occupied by the three companies which at present exist that it will be exceedingly difficult for any new company to get a foothold. The promoters of the consolidation assure us that all talk of opposition is sheer nonsense, inasmuch as the Page patent would prevent the formation of any new companies to work the Morse system, and that it would most assuredly be used to stop even the Government from using that system. This, however, is no obstacle, as the Delany patent relay is a satisfactory substitute for, if not a much better device than, the Page patent. Even if Mr. Delany's genius had not obviated that difficulty, the Government, if it desired to use the Page patent, could take it in pursuance of its undisputed right of eminent domain, and its consequent authority to convert private property to the use of the commonwealth on payment of a reasonable compensation.

Congress took hold of the question with commendable promptitude, though in its zeal for the public welfare there is danger of playing into the hands of speculators. The newspapers are, however, in the main, clear and emphatic on the question, and with this restraining influence there can be but little fear of Congress going wrong. A detailed report of its proceedings will be found in another column.

In the various States the law officers and the disgusted public are proceeding more cautiously. In the Assembly, at Albany, on the 20th ult., Mr. Spinola called up his resolution in relation to the consolidation of the telegraph companies, and supported it in a short speech in which he insisted that the consolidation was against the public interest. The preamble was stricken out and the resolution attached, which instructs the committee to inquire into the proposed consolidation and report a bill to prevent it, was adopted. According to the prospect just now the report will be ready about the first of March, too late to interfere with the present consolidation. In Pennsylvania such a consolidation is expressly forbidden by the new constitution, adopted in 1874. The closing sentence of section 12, article 16, of that instrument is as follows: "No telegraph company shall consolidate with or hold a controlling interest in the stocks or bonds of any other telegraph company owning a competing line, or acquire by purchase or otherwise any other company's line of telegraph." Immediately upon receipt of the news of the contemplated consolidation, the Attorney-General of Pennsylvania commenced an opinion, taking the ground that the American Union and Western Union will forfeit their rights and privileges in that State by persisting in the negotiations. This ought, in the natural course of events, to block the arrangements in Pennsylvania; but the master mind that controlled and guided the stupendous scheme of consolidation will not be at a loss for an expedient to circumvent the constitution of a mere sovereign State.

In Canada, the news of the consolidation created a panic. The public were aware that Gould owned nearly \$300,000 worth of Dominion stock and held the lease of the line under a promise to pay five per cent. on its capital for ninety-nine years. They argued that Gould would thus throw no more business over the wires of the Montreal company than he could help. The price for Montreal Telegraph therefore fell 13 per cent. on the 14th and 15th ult., while the shares sold amounted to nearly a tenth of the company's capital.

Among railroads, the Baltimore & Ohio has been the first to show a tendency to kick back. That road has promptly refused to consent to a transfer to the Western Union of its contract with the American Union.

Among the merchants the excitement reached fever heat, although there is something ludicrous in the patient attention which they give to letters and verbal propositions from a crowd of phantom companies, all bearing high-sounding names and offering to connect up most remote parts of the world on short notice, if capital were only supplied; all professing to have taken "preliminary steps" toward effecting a mammoth op-

position, but in whose ranks a \$20 bill must be a curiosity.

But the brokers, at least, are in earnest. Two days after the first intimation of consolidation a large meeting of the Cotton Exchange was held in this city (Jan. 15), at which great promises were made for the incipient opposition.

The American Rapid was declared to be nearly ready to introduce a simple form of the perforating machine into private offices, so that ever broker might become his own telegraph operator—an idea which will prove as objectionable to operators as the most exclusive monopoly. The Mutual Union, which has lately given many signs of lasting vitality, was very favorably mentioned, as were also the New York, Land and Ocean Telegraph Company, the Pioneer Telegraph Company and the American Stock and News Company, all of which may soon take definite shape as a combined and formidable opposition.

The "New York Land and Ocean Telegraph Company," which was organized about a year ago, gives great promise for the future. The British has given it the right to land on any portion of its coast and to construct land lines. The capital of the new company is to be \$6,000,000. It has partly closed the contract for laying two cables of phosphor-bronze, guaranteed to transmit 20 words per minute each, and to cost \$9,000,000. The intention is to charge 20 cents a word to the general public, and a less rate to the press for the service. At first the company will build land lines to connect only the principle cities with New York. A clause in the company's charter forbids it to combine with any other company in regard to rates, or to sell out to or consolidate with any other company under penalty of forfeiture.

Hints are also given of the formation of a gigantic telegraphic combination which will include nearly the whole telegraphic world, with General Eckert at its head. An account of it will be found in another column, under the head of "Another Vast Telegraphic Scheme."

At this Cotton Exchange meeting speeches were made, and a committee of eleven appointed to "confer with the Cotton, Produce and other Exchanges throughout the country, as well as with bankers, merchants and others opposed to any monopoly of the telegraph business of the United States, with a view to having telegraph business performed by a company so organized as to prevent its being absorbed by or consolidated with any other company."

The Cotton Exchange at St. Louis, on the 20th ult., adopted a resolution for the appointment of a committee of three to confer with the New York Cotton Exchange, with a view to having telegraphic service performed by a company so organized as to prevent it being absorbed by or consolidated with any other existing company or companies. A resolution favoring government control of the telegraph lines of the country was defeated.

A special meeting of the Board of Trade and Transportation was held in this city on Friday, Jan. 28, to consider what steps should be taken to prevent the telegraph consolidation. The meeting was unusually well attended, and the monopoly was vigorously denounced. Resolutions were adopted urging the repeal of an act of 1870, under which the proposed union will be made, or its amendment, so as to prevent the union. The board's committee on legislation were placed in charge of the object sought to be gained by the board. It was thought that prompt action could secure the repeal, or amendment, of the law, in time to prevent the possible ratification of the telegraph agreement by the stockholders' meeting.

In Ohio, leading members of the General Assembly have been consulted in reference to the advisability of passing a law which will prohibit the proposed consolidation. Prominent attorneys are of the opinion that the proposed consolidation of the interests of the companies within the State can be prevented by an act of the Legislature, and cite as a precedent an act passed seven years ago, which prevented the consolidation of the Cleveland, Columbus, Cincinnati and Indianapolis Railway and the Atlantic and Great Western road, two lines running parallel from Cincinnati to Cleveland. On the other hand, however, it is claimed that nothing can be done in that State to checkmate the consolidation, and that the Legislature is rendered

powerless by its own enactments of last winter and the constitutional provision of non-interference with vested rights.

In the Pennsylvania Senate on Tuesday a resolution was passed calling attention to the constitutional provision against telegraphic consolidation, and directing the Committee on Corporations to determine what legislation is necessary to carry the Constitution into full force. Immediately after the passage of this resolution a bill was presented to the Senate, entitled "An act to escheat to the Commonwealth the telegraph lines and property of telegraph corporations, associations and companies which violate the provisions of the Constitution prohibiting the consolidation with, or the holding of, a controlling interest in the stock or bonds of a competing line of telegraph, or the acquisition, by purchase or otherwise, of any other competing line of telegraph."

It provides that after a final decree of the Court establishing the forfeiture and escheat to the Commonwealth, the Auditor-General shall proceed "to sell by public auction at the Capitol, in Harrisburgh, the telegraph line, property, stocks and bonds so escheated."

It seems incredible that this clause should be found inapplicable to the case, as it had never been supplemented by appropriate legislation fixing penalties for its violation. It would thus appear that the people of Pennsylvania are denied the benefits of their boasted new constitution, as applied to this case, owing to the neglect of their Legislature.

During the past week a number of capitalists of Chicago have formed an association for the construction of a four-wire telegraph from that city to New York. Among them are N. K. Fairbank, George L. Dunlap, George C. A. Kent, H. W. King, and Samuel Johnson. Another party of capitalists, including Marshall Field and John B. Lyon, in the same city, organized another association, intended to take in all the principal Eastern cities with direct lines from Chicago. When the two parties found out each what the other was doing they immediately consolidated, and have sent an application for a charter to Springfield. On the 24th ult., at Springfield, Illinois, the Secretary of State authorized Edison Keith, M. S. Crosby and C. D. Hamill, of Chicago, to organize the "Merchants' Telegraph Company," with \$1,000,000 capital. The principal office is to be in Chicago. The company is authorized to construct lines from Chicago to any part of the United States. The object is a line to New York. It is further stated that the brokers have had a line between Chicago and Milwaukee running for some time past, and have been doing business at the rate of 10 cents for ten words. The profits of 1880 to the stockholders amounted to 400 per cent. on their original investment after the payment of all expenses, and before the consolidation was announced it was intended to extend the lines to St. Louis.

The members of the New York Produce Exchange say there will be no trouble in obtaining all the money needed in Chicago without asking for public subscriptions, but that if this should not be so all the projectors have to do is to come to New York and they will be accommodated. They can in any event be assured of receiving the full patronage of the New York merchants.

Meanwhile, Mr. Jay Gould, Mr. Vanderbilt, General Eckert and the other principals were quietly engaged in arranging the details of the consolidation, regardless of the clamor on all sides.

On the 19th ult. the second act was completed. On that day, at eleven o'clock in the morning, the board of directors of the American Union Company met, in this city, President Eckert in the chair, and formally approved of the plan for consolidation. At noon on the same day the Western Union board of directors met and went through a similar form; and at two o'clock the Atlantic & Pacific's directors—nine out of the fifteen trustees of which belong to the Western Union—met and ratified the scheme of consolidation. But one step now remains to be taken—the ratification by the stockholders, which is morally certain to take place on the 5th of February.

As the rules of the Stock Exchange require 60 days' notice of a new issue of stock, the stockholders' meetings of the three companies to vote on the agreement can not be held before next



Saturday, the 5th inst. Meanwhile, President Green has issued a notice for a special meeting of the stockholders of the Western Union Company for the purpose of acting upon the terms of consolidation, purchase and agreement between the Western Union, American Union and A. & P. companies "for the purchase of property, rights, privileges and franchises of said last-named companies respectively, and the increase of the capital stock of this (Western Union) company, to the full amount of eighty millions of dollars."

Immediately after the directors' meeting, just referred to, Mr. Rufus Hatch, of this city, commenced a suit in the Supreme Court against the three companies, to prevent the contemplated consolidation; and on the 20th ult. obtained an injunction restraining the defendant companies "from entering into any agreement of consolidation, and from increasing their capital stock and other matters." This suit, however, will have about as much chance of success as the prohibitory injunctions of the Constitution of Pennsylvania has with these men, or as the suit brought, some time ago, to prevent the "pooling" arrangement between the Western Union and A. & P. Messrs. Gould, Vanderbilt and Co., express "doubt" as to the power of the courts to interfere with private rights, as the proposition for consolidation has been unanimously approved by the responsible parties of each company.

On Wednesday last argument commenced, and affidavits were produced to show that Mr. Hatch was "short" on facts as well as on Western Union. The argument continued until Friday, Jan. 28, when the Judge took the papers and reserved his decision.

The New York *World*, of Friday, Jan. 28, published what it called "a careful abstract of the agreement by which the Western Union Telegraph Company purchases the assets, plant, patents, real estate and stocks owned by the American Union and Atlantic and Pacific telegraph companies."

When questioned as to the correctness of the *World's* version of the agreement, Dr. Green, President of the Western Union, said:

"I have been very much puzzled about that publication, and, without comparing it with the contract, to see if it is correct in all particulars, I can only say that the figures are substantially correct. It cannot be considered authoritative, as no authority is given for the statement, but the story is so accurate in its details that it must have been written by some one who had read and studied the agreement."

Dr. Green professed confidence in the execution of the scheme, but added that he should consider it, as in the case of the Atlantic and Pacific arrangement, a hard contract for the Western Union.

Following is a synopsis of the agreement as published in detail in the *World*: The consideration paid the American Union is 150,000 shares of Western Union stock for 100,000 shares of American Union stock and \$5,000,000 bonds, the Atlantic and Pacific receiving 84,000 shares of Western Union stock for 140,000 shares of A. & P. stock. The 72,010 shares of A. & P. stock, belonging to the Western Union, are to be included in the exchange, the Western Union stockholders directly receiving the stock issued for them. The Union Trust Company is to conduct all these exchanges. The Western Union is to increase its capital stock by \$38,926,590, of which \$15,526,590 stock will go to the present stockholders and the residue (\$23,400,000) to the other telegraph stockholders, on the basis of the above terms. The Western Union stockholders are also to receive the \$58,355.50 of stock now in the company's treasury. The Western Union undertakes all the telegraph and other contracts of the other companies, particularly the American Union's agreement to lease for cable messages certain wires to the owners of the two new cables about to be laid across the Atlantic Ocean. The contracts of the A. & P. now in litigation, or in regard to which any litigation or adverse claim has arisen, are excepted. The agreement of February 28, 1880, between the Baltimore and Ohio Railroad Company and the American Union is particularly excepted. The Western Union is to be put into possession of its purchase on February 24, but the purchase is to date from January 1, 1881, all earnings and expenditures of either of the purchased companies since

the latter date being considered for account of the Western Union. The American Union stipulates that the assets of the Central Construction Company and all its properties, rights and franchises remaining after the discharge of its debts shall be turned over to the Western Union. In case the corporate authority requisite for the consummation of the general agreement cannot be secured, no liability for damages is to arise therefrom to any of the parties, but the agreement shall be void. In the event of delay from legal process, no liability is to accrue therefor to the party affected, but the rights of the parties to the agreement are not to be otherwise affected thereby.

We may as well recognize now that the fact of consolidation can no longer be questioned, and that the three companies thus combined under such able management will form a monopoly which it will be exceedingly difficult to reach. Congress, merchants and the general run of speculators must not forget that, under the spur of a cut-throat competition, telegraphic rates have been reduced below a paying figure, and that telegraph companies are not purely eleemosynary institutions. A ruinously low tariff to the public means a starvation salary to the working operator; and, monopoly or no monopoly, we must have a fair paying rate on telegrams.

It should also be stated that the great body of operators display a surprising amount of philosophy under the new order of things; and, while the total extinction of opposition, for the time being, is deeply regretted on all sides, there is much confidence exhibited in the good faith and executive ability of the leader of the newly-established monopoly. The operators have really no immediate interest in the matter of high or low tariffs, and concern themselves principally in discussing their own affairs. It is apparent to them that a certain number of their fraternity will suffer by the consolidation, though not so many as it was at first feared, but it is generally admitted that, judging from former precedents, at least ninety per cent. of the victims will better themselves by the upheaval, while the remaining ten per cent.—the customary quota of ne'er-do-wells—will need the generous helping hand which one genuine telegrapher, poor as he might be, never yet refused to another.

#### A Great Storm and Destruction of Telegraph Property in New York.

On Friday, Jan. 21, a tremendous storm of sleet, rain and wind laid waste nearly the whole of the telegraph and telephone wires in and about New York and Brooklyn, and on that day this city was relegated to the condition in which it existed before the invention of the electric telegraph. The damage done has never before been equalled in the history of telegraphy in this country. The 276 circuits leading from the Western Union main office, and its 100 local circuits were all out of order; the American Union and Atlantic & Pacific circuits were in a similar predicament; telephones became dumb; the stock, police, fire-alarm and American District machinery lapsed into utter and irresponsible silence, and Manhattan Island was severed from the rest of the world, while all day long persons were calling at the offices of the various companies to complain that falling poles and stanchions were tearing down their walls and ripping off their roofs.

At daybreak all the telegraph wires in the city had assumed the appearance of small, white threads; and, as the morning wore on and the storm increased, they took on fresh accumulations of ice, and grew in size until they became great thick ropes of crystal. The silver strands thus formed ran in great parabolas from pole to pole; they hung in every direction, interlacing one another and forming geometric figures and graceful, glittering festoons of lace-like patterns. Then, as their weight of ice increased and the breeze freshened, they snapped asunder and dropped writhing into the streets, sagging and swinging

across the railway tracks or, broken off short, lashing the sides and windows of adjacent houses. Policemen at first caught up the ends and wound them about lamp-posts, hydrants and convenient posts; but the wreck quickly became so general that the order was given to wayfarers, "Every man look out for himself." Some idea of the severity of the sleet storm may be obtained from the fact that all the clocks on the churches and public buildings were stopped by the accumulation of ice on the hands, all stopping nearly at the same time—between 8:30 and 8:45 A. M.

From that time onward there was no cessation until the havoc and ruin was complete. Telegraph poles, some of them carrying 120 wires, came crashing down in all directions. At the Post-office the great stanchions on the roof with their burden of wires were torn off by the force of the wind, creating a panic in the street. "Look at that pole," yelled a truck driver, pointing to a great mast, swaying like a reed before the breeze. "Clear the street there!" The police rushed forward; passers-by dodged into convenient doorways; an occasional woman or child was rapidly carried to a place of safety, and then there was a moment of suspense. "See her sway; there she goes; going, going—look out—gone!" And the pole, caught by the gale, came sweeping down and shot through the 12-inch wall of a saloon on the opposite corner, "like a needle through cheese," as the truckman expressed it. And so throughout the day the destruction went on, this scene being continually repeated.

The telegraphic fire alarm system was, of course, abandoned and mounted firemen paraded the streets in search of possible fires, and ready to gallop with a timely warning to the nearest station. The police had to resume the slow and unsatisfactory method of communicating to one another by messenger. At nightfall the great city, isolated from the rest of the world, had gone back to the appliances for fire alarms in vogue forty years ago, and men were once more stationed in the old, half-forgotten watch towers, to scan the roofs for miles around on the look-out for fires, while the cracked and rusty old bells were again brought into use as alarms.

The damage to the telegraphic property was too great and widespread to admit of a detailed report. What narrowly escaped being a serious accident was reported at Second avenue and Forty-third street, when an engine caught a bunch of telegraph wires that had fallen across the track and, before it could be stopped, uprooted and threw down nearly a dozen neighboring poles. On all the other railroads trains were run slowly and cautiously, owing to the fall of poles across the track.

There were a great number of casualties reported throughout the city.

The wreck was nearly as great in New Jersey, within thirty miles of the city. At Guttenburg, N. J., three hundred poles went down. In Newark, the tall masts swayed and trembled so violently that the police were obliged to stop traffic on a number of streets. All the wires over the Newark Bay Bridge, one and seven-eighths of a mile long, on the line of the Central Railroad of New Jersey, were torn down by the poles, which were bolted to the bridge, snapping like pipe-stems. Telegraph wires and poles were also broken down in Elizabeth, Paterson, New Brunswick, Orange, Bloomfield, and other New Jersey cities, and electric communication was interrupted more or less all over the State.

Beyond Elizabeth, partial communication was maintained with the South and West, and on Friday and Saturday news and private messages were carried between Elizabeth and New York by train.

On Friday, Mr. G. K. Walcott, of the Western Union main office in this city, started from New York for Boston at 4 P. M., with bundles of messages for New Haven, Hartford, Springfield and Boston, but ascertaining that the wires were all working east of New Haven, he stopped there and Manager Fairchild putting his full force at work on the business, by eight o'clock everything was clear. Mr. Walcott had with him Amos Learned's afternoon press reports, which he started on the regular press wire, and having also the late editions of the New York evening



papers, he made up a full Associated Press report, and with Mr. Weaver, the press operator, sent the whole batch to Boston and way papers.

By the following Monday telegraphic facilities had been very generally restored, although one week after the storm its effect was still visible in the crippled telegraphic resources.

The destruction of the property of the companies is variously estimated at from \$200,000 to \$500,000, in addition to the consequential loss from suspension of the regular business.

The last great smash-up of our telegraphic system, and the only one approaching that of the 21st ult. in severity, occurred eight years ago—on Sunday the 5th of January, 1873. At that time telegraphic headquarters were transferred from this city to Jersey City, Weehawken and other neighboring points. That storm cost the telegraph companies \$50,000 for repairs; but, as that was prior to the invention of the telephone, and as the telegraphic system of that time can be in no wise compared to the present, the cost of repairs in 1873 forms no criterion of the damage done here in 1881.

#### The Postal Telegraph in Congress.

A few weeks ago nothing seemed more remote than the possibility of an American postal-telegraph scheme, but the gigantic telegraphic combination now talked of has, at last, afforded a seemingly strong argument to the admirers of this decidedly Imperialistic scheme. It is worthy of note that at the first session of the present Congress—nearly two years ago—an amendment to the army appropriation bill was passed authorizing telegrams to be transmitted by railroad companies owning or controlling telegraph lines which would file a written acceptance of the restrictions and obligations imposed by Title 65 of Revised Statutes (which relates to the construction of telegraph lines upon the public domain) for the government and the general public.

This, and similar measures were opposed by those who are adverse to increasing the power of the government. But, since the news of the consolidation, a great change of sentiment seems to have taken place, and there now appears to be a strong feeling that Congress should shield the people from the arbitrary dominion of a telegraphic monopoly.

Immediately upon the announcement of the scheme for consolidation, the House Post-office Committee resurrected the bill introduced on the 3d of last May, by Mr. Ellis, of Louisiana. This bill required the Postmaster-General, as an experiment, to establish by purchase or construction a telegraph line between Boston and Washington. The telegraphic offices at intermediate points were to be located in post-offices and the carriers employed to deliver messages, and postal telegraphic stamps for the prepayment of messages were provided for. A rate of 15 cents for 24 words for a distance of 200 miles was fixed in the bill, with one cent for each additional word; for 1,000 miles, 40 cents, with two cents for each additional word; 2,000 miles, 75 cents, with three cents for each additional word; 3,000 miles, \$1, with five cents for each additional word, and for distances less than 200 miles, where the message passed between two offices without passing through an intermediate office, the rate was fixed at 10 cents for 25 words, with one-half cent for each additional word. The committee has now referred it to a sub-committee.

On the 17th ultimo, two resolutions were introduced in the House of Representatives at Washington, both with a similar object. One of them, introduced by Mr. Springer, was referred to the Post-office Committee, which, on the 20th ultimo, resolved, by a vote of 7 to 1, to report it favorably to the House at the earliest opportunity. It reads as follows:

*Resolved*, That the Committee on Post-offices and Roads be instructed to inquire into the expediency of establishing by law a telegraphic postal system under the government of the United States, and also the cost of reproducing facilities of transmitting telegraphic messages equal to those now possessed by existing corporations, and as to the expense of operating the same, with power to send for persons and papers and report at any time by bill or otherwise.

This, of course, involves an investigation of the actual value of the property of the Western Union Telegraph Company and the cost of operating its line—a task which will be found exceedingly difficult.

On the 26th ult., the Post-office Committee reported to the House the bill recommending Postal Telegraphy, and it was “placed on the House calendar.” The committee recommended that the resolution be passed for the following reasons: “That it is evident to the committee that there is a general demand by the public for protection in telegraphic communications from the extortions of a great telegraphic monopoly that absorbs its competitors as they become established, and thus compels a tariff which pays dividends on stock believed to be largely watered, and therefore official inquiry should be made into the facts and legislation proposed in accordance therewith.”

The other resolution, introduced Jan. 17, by Mr. Ford, of Missouri, was more peremptory in tone, declaring it to be the opinion of the House that every interest demands the immediate construction of telegraph lines by the government, and instructing the Committee on Post-offices to report a bill for the construction of such lines as may be necessary to protect the people from monopoly. This resolution was, however, lost by a technical ruling of the Speaker.

The slow headway made by congress has disgusted a good many advocates of the government monopoly. When the “Springer resolution” was referred to the committee, the sentiment in Congress in favor of a system of government telegraph ran very high, and the sub-committee got everything in shape to push forward the work of preparing a suitable bill for immediate consideration; but when the resolution was reported back favorably, and the House failed to act on it at once, the enthusiasm became less warm, and the public now looks rather to private enterprise to redress their wrongs.

In view of the brief period allotted to the life of the present Congress, it is scarcely probable that any definite action can be taken before next Winter.

#### Death of A. G. Stohlbrand.

To the Editor of The Operator:

SIR: It is my sad duty to announce to fellow operators the death of Mr. A. G. Stohlbrand, which occurred in this city on Thursday, Jan. 20. Mr. Stohlbrand was a first-class operator—largely known among telegraphers throughout the United States. Although his age was but thirty-five he had filled many important positions. He commenced at Chicago under Mr. Swain. From there he went to New York and Philadelphia; was night manager at Philadelphia for the P. & A. Co.; afterward went to Albany, N. Y., for same company. Then went to Charleston, S. C., as manager for the Southern & Atlantic Co. He was afterward manager for Automatic Co., in Washington and New York. He returned to Chicago and accepted the managership of the A. & P. Co.'s office, where he was taken ill with hemorrhage of the lungs, four years ago. Through advice of his physician he went to Colorado, but realized no benefit from the change. From there he went to Santa Fe, N. M., with same result; thence to Los Angeles, Cal., where he stayed until about eighteen months ago, when he returned East against the advice of physicians, who told him that he would not live even to cross the mountains, but would bleed to death through lungs.

He has been employed in the Cincinnati office nearly one year. *Splendid courage* has kept him up, and that alone. It will be a long time ere the operators of the Cincinnati office will forget his tall, spare form, as they have seen him pause for the purpose of regaining his breath on each landing of the five flights of stairs which lead to our operating room. Many a heart has beat sorrowfully for the poor fellow under these circumstances, many here would have assisted him in his breathless condition if in their power. Amid all this distress, he was always cheerful, and manfully, uncomplainingly, worked away, even with the shadow of death over him, for he worked the Baltimore wire but last Saturday, 15th inst., only five days before his death. I suppose I need not add that his disease was consumption.

To his mourning wife and relatives I do not know what better words of comfort I can offer, in behalf of his many friends in the Cincinnati office, than these words from Bayard Taylor's “Death in Arabia”:

“Allah glorious! Allah good!  
Now thy word is understood;  
Now the long, long wonder ends!  
Yet ye weep, my erring friends,  
While the man whom ye call dead,  
In unspoken bliss, instead.  
Lives and loves you; lost 'tis true,  
By such light as shines for you;  
But in the light ye cannot see  
Of unfulfilled felicity—  
In enlarging paradise,  
Lives a life that never dies.”

CINCINNATI, O., Jan. 22, 1881.

W. F. B.

#### Another Vast Telegraphic Scheme.

On Wednesday, January 19, there was filed at Albany the certificate of association of “The American Telegraph and Cable Company.” This company is organized for the purpose of “owning, constructing, purchasing, leasing, or otherwise acquiring, using, operating, and maintaining a land and submarine line or lines of electric telegraph, partly within and partly without the limits of the State of New York.” The capital stock will be \$20,000,000, with power to increase the same to such amount as may be necessary to build and construct the lines of telegraph and cable contemplated by the company, and the term of the association is fixed for 50 years, from the 18th of January, 1881, to the 16th of January, 1930, and its head-quarters are to be in the City of New York. It is said to be a scheme by which, under the general management of General Eckert, there shall be established a grand telegraphic network extending around the world, with New York as its centre. It also proposes, with the co-operation of the consolidated Western Union Company, “not only to increase the existing cable facilities between this country and Europe and to extend southward the cables which now connect this country with Cuba and the West Indies, so as to secure for the great coffee trade of the United States a direct telegraphic communication with Brazil, but also to lay cables under the Pacific from San Francisco to Honolulu. From Honolulu one cable will be laid under the North Pacific to Japan, connecting there with the cable from Itoki to Shanghai, in China, and another under the South Pacific, by way of Ellice's Islands and the Friendly Isles, to New Caledonia, and thence to Brisbane, in Australia, where it will connect with the Australian and New Zealand cable system in one direction and with the Australian and Straits system in the other direction.”

If the government can be induced to grant the necessary subsidy, “a connection may be made from Vancouver's Island, by way of Alaska, with Petropaulowski, and thence with the north of Japan.” Under the new arrangements, also, “our telegraphic and cable communications with the west coast of Mexico, with Central America, and with South America will be pushed forward with great rapidity.”

#### The Telegraph in Baltimore.

To the Editor of The Operator:

SIR: The many readers of THE OPERATOR will be pleased to hear of its increased circulation here.

The American Rapid Co. opened on the 1st of January with a fair corps of operators and greatly reduced rates. It is patronized mostly by the different freight and express companies. Mr. W. Boggs is chief operator.

The A. & P. business is handled by Mr. W. H. Stewart, manager, who also attends to the financial interests of the fraternity, assisted by Messrs. Boyer, Glenn, Sampson and Frankenburg, at the main office. The city offices are manned by the following operators: Messrs. Greenwald, Beck and William Clark.

The large and flourishing commission house of Milmine, Bodman & Co. has leased wires from the American Union, connecting their of



ices with the Corn Exchange. Mr. E. O. Eastlake, late of the Western Union, is their operator.

The Board of Trade is still booming under the sagacious and efficient management of its chief, Mr. E. H. Cole, assisted by the amiable Dick Ganger, of W. U. fame.

The American Union has opened several new offices recently with Messrs. Cahill, Hogan, Lenz, Stayton and Van Witsen, the latter being the pioneer of the B. & O. Messrs. McKenna and Lenz are "owls."

Mr. F. M. Clark, of Peter Wright's private lines, has abandoned his quad and accepted a similar position with Mr. J. A. Hambleton, the well-known banker. The boys tip their hats and wish Finley bon voyage.

One of the finest wires in the city is operated by the Balto. Elevator Co., more familiarly known as the Canton elevators. It was started in 1875, and the large business done compelled the opening of a new office each year. The following gentlemen work the wire: Messrs. Caner, Scott, Hagarman and Dorsey, the latter being the senior operator. Two important features are that the company pays its force good salaries, and all the boys take THE OPERATOR. BALTIMORE, Jan. 20, 1881. EXCELSIOR.

### Indianapolis Items.

Since my last epistle, the fraternity in this city of concentric circles has been subject to several changes. The death of Chief Operator Langhorne, of the Western Union, has necessitated an advance in the line of promotion in that office. First Assistant Chief H. C. Sickles has been appointed chief; second assistant F. A. Moore takes Mr. Sickles' former place as first assistant, and our genial and good-natured friend, Joe M. Taylor, of the night force, has been transferred to Mr. Moore's former duties.

The hours in the W. U., commencing Jan. 1, have been subject to a revision. Half of the day force report at 7.30 A. M., and are relieved at 5.30 P. M. The other half report at 8 A. M., and are relieved at 6 P. M., allowing a half hour in the middle of the day for the usual diversion. By this arrangement the day men are relieved from 6 to 9 P. M. tri-weekly trick. The night force report at 6 P. M. and have no mid-day hour relief to work.

Two men have been added to the operating force, Messrs. Crull and Detrick. Mr. Crull was formerly train despatcher for the I. D. & S. R. R., in this city Mr. Detrick hails from Greencastle, Ind. At the American Union office there has been little change.

The A. & P. Co.'s business in this city is managed by Mr. A. E. Farnsworth and manipulated by Mr. Harry Smith, at the main office, and Mr. J. J. J. at the Chamber of Commerce branch office. They have closed the branch office at the Merchants' Exchange room.

At the different depot and headquarter offices there have been but few changes. Mr. Shirley, formerly assistant dispatcher on the Belt Railroad, has taken service with the I., B. & W., at their office in the Cleveland block.

Mr. Isgrigg, formerly with the I., B. & W. at Urbana, Ill., later with the I., D. & S. here, is whiling away a few days at J. P. Wiggins' branch office on Georgia street, during the absence of Miss Lou White, who is assisting Miss Clara Louisa Bottsford in her endeavors to be appointed state librarian.

### Chicago Notes.

To the Editor of The Operator:

SIR: There are no office changes to note this issue, no incomers of late, and the thrilling uncertainties consequent upon the present unsettled state of telegraphic affairs have had the effect of holding back the would-be outgoers, who are now sitting uneasily upon their chairs, waiting for more light ahead before deciding upon their next move. Even the periodical and "pay-day" revellers have looked out upon the winter weather and appeared unusually sober. The great sensation—the consolidation and its possible results—has been fully discussed during "let ups" and spare moments, and, so far, I believe, the hopeful predictions have outweighed those of a more depressing character.

The late movement to make "the monopoly" more invincible than ever seems to have brought

about an awakening among business and public men generally that can hardly fail of speedy and fruitful action; and therein lies our encouragement. Representatives of commerce and the press appear to comprehend the situation, and therein lies our confidence that the "spirit of American independence" will move in this broad land, and, perhaps, fill the air with so many wires that pigeons will not dare to fly. You have doubtless learned, through the press, of the organization of a new telegraph company by the leading solid men of this city. "Where there is so much smoke, there must be some fire."

The seventh annual reception and ball of the Chicago telegraphers will be held at Martine's Hall, West Side, on Thursday evening, Feb. 24, 1881. Invitations can be had on application to the Secretary, E. P. Whitford, Western Union Telegraph Company, Chicago. One hundred and fifty dollars have already been subscribed toward defraying expenses. The committee of arrangements will spare neither time, pains, nor money to make it the best social gathering ever given in this city by the fraternity.

CHICAGO, Ill., Jan. 23, 1881.

INEWRI.

### Pacific Telegraphers' Relief Association.

The annual meeting of the above association was held on January 9, in the manager's room, W. U. Telegraph office, San Francisco, President Leatch in the chair. The president's report showed the association to be in a flourishing condition, both the membership and the cash in bank having more than doubled during the past year. The association has not been called upon for relief by any of its members during the year, but a donation of \$10 was made to the family of a messenger whose father and mother died suddenly, leaving 3 young children unprovided for. The treasurer's report is as follows:

Cr.		
Jan. 1, 1880.—Cash on hand and in bank.....	\$231.96	
Jan. 1, 1881.—Receipts from monthly dues.....	236.47	
Dr.		\$468.43
To postage, printing and stationery....	\$9.50	} 29.50
" care burial plot one year.....	10.00	
" relief Toomey family.....	10.00	
Leaving a balance on hand of.....	\$438.93	

### Proposed Electrical Society in New York.

As there seems to be a desire among telegraphers in and around this city for an electrical society, the undersigned assume the responsibility of calling a meeting of all persons connected with the telegraph or telephone, interested in the subject, to be held at the United States Hotel, corner of Fulton and Water streets, New York, Feb. 8, 1881, at 8 P. M.

This meeting is intended to be merely a preliminary one, at which the practicability of forming a society may be discussed and plans for its formation decided upon.

P. J. Tierney, D. R. Downer,  
J. W. Moreland, E. T. Barberie,  
E. A. Leslie, F. W. Cushing,  
A. J. Creelman, John H. Dwight,  
J. B. Sabine, W. B. Waycott,  
Geo. F. Stainton.

### TELEPHONE DEPARTMENT.

Leadville, Colo., has now over 300 telephones in use.

The first public telephone line was laid down by the Berlin telegraph office on the 22d of December last.

The telephone line connecting Providence, R. I., and Boston and Lowell, Mass., has been completed. The length of the line from Boston to Providence is about fifty miles.

A meeting of the stockholders of the American Speaking Telephone Company was held in this city on the 20th ult., directors were chosen, and the following officers elected: George B. Prescott, President; Norvin Green, Vice-President; L. E. Lefferts, Secretary; R. H. Rochester, Treasurer.

Thomas Moody sued the Metropolitan Telephone and Telegraph Co. for \$1,000 damages for injuries sustained by his son, John F., by one of the company's iron gratings falling on the boy's leg. By consent of the defendant company a judgment for \$650 was entered against it.

In the disputed patent for a return wire or

"metallic circuit" for telephone use, the Commissioner of Patents has made his final decision in favor of David Brooks, the well-known inventor and authority in telegraphic matters, of Philadelphia, against A. G. Bell, of telephone fame.

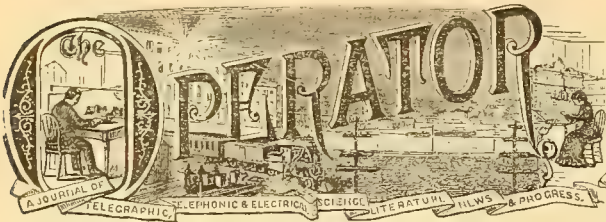
On Sunday morning, the 16th ult., the telephone exchanges in Lewiston, Portland and Biddeford, Maine, were connected. The wire used was railroad wire, running via Brunswick, and the current, passing through relays in several offices, made the distance, equivalent to one hundred and twenty-five miles. The tones were very distinct in Portland, and conversation could be carried on with Biddeford, though the battery on that line was hardly sufficient. Manager Farnham, of Portland, conversed with ease with Messrs. Stauford and King, in the central office, in Lewiston.

The Lewiston, Maine, *Journal* says: An old gentleman with a big, spreading ear-trumpet came into the central office of the Telephone Exchange, Friday. He uncovered the horn and asked to see the Superintendent. Mr. King came forward and the stranger addressed him thus: "Mister, I've hearn consider'ble about this 'ere telephone business. I've been told they fix it so you can hear a person speak for 20 miles. Now I'm kinder hard of hearin' and I wish you would put the telephone rigging on my trumpet, so I can hear the parson preach Sundays." The old gentleman was as honest as could be about the matter, and it took Mr. King some time to make matters clear to him.

A telephone operator in this city, in answer to a question as to who uses the telephone most, says: "Almost everybody uses his telephone some time in the day, but the drug men, wholesale grocers, express men, steamboat men, stationers, printers and bookbinders use their instruments the most in this section. The fish dealers begin early in the morning, calling for dealers uptown and the hotels. Then as soon as the New Haven boat arrives twenty or more men are called for in succession to notify them that they have freight on board. Then come the express agents. They call all day long; and so do the steamboat and railroad agents. The retail druggists call for the wholesale druggists and order goods, and the wholesale grocers keep us busy all day. The stationers, printers, bookbinders, publishers and paper men seem to be calling every two or three minutes."

At Washington, on the 26th ult., the People's Telephone Company filed before the Examiner of the Patent Office, in the class of electricity, a brief on an application for a patent on an electric-speaking telephone for Daniel Drawbaugh, a shifless, though inventive genius of Cumberland County, Penna. A few days since the same company filed in the Circuit Court of the United States at New York an answer to an injunction and suit by the American Bell Telephone Company. The People's Telephone Company is an organization formed on the Drawbaugh invention, with several patents for improvements thrown in by the inventors as an equivalent for stock, or purchased outright, so that a perfect telephone can be made. The company has spent over \$50,000 so far, perfected a telephone, rented offices in New York, selected the factory, is ready to contract for the manufacture of telephones, wires and poles, and only awaits the issue of this injunction and suit or the issue of a patent from the Patent Office to Drawbaugh. This company has not sold a share of stock outside the original subscribers, and the stock is pooled in less than fifty names. It proposes to furnish telephones for less than half the charge made by the Bell Company, and decrease the charge as the plant is extended. At present, the Drawbaugh application for patent stands as rejected on two grounds. First, That patents have been granted to others prior to the date of Drawbaugh's application. Second, That telephones, acting and operating on similar principles, were in public use and on sale prior to Drawbaugh's application. The case comes forward now for rehearing on three questions of law. If Drawbaugh gets a patent then the patents of Bell, Edison and Gray fall to the ground, for it is claimed that Drawbaugh perfected and used the invention several years before either Bell, Edison or Gray applied for a patent.





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W. J. JOHNSTON, Editor and Publisher.

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### THE BOYCE FUND.

We shall be greatly indebted to agents of the Telegraphers' Mutual Benefit Association, or any of the members in the various districts, who will kindly interest themselves and will forward us, for publication in *THE OPERATOR*, the names of subscribers and the amount subscribed to the above fund. Any remittance to this office will be promptly turned over to Mr. J. N. Ashley, and acknowledged in these columns.

### THE GOVERNMENT AND THE TELEGRAPH.

The apparent collapse of everything worthy of the name of telegraphic competition has given new life to the old and decidedly un-American suggestion of a postal telegraphic system. It is a scare which, in the past week or two, has prompted the introduction into our national legislature of a number of new bills looking toward the establishment of such a service. The idea, which was started by Gardner G. Hubbard and others, has been gradually growing weaker during the past five years, since our cherished Constitution and traditions are all plainly opposed to a "paternal" form of government. It is an essentially American doctrine that the People in the aggregate can, without the aid of any political Moses and Aaron, right their own wrongs if they so choose, and that if they do not choose to do so they have no right to complain of the consequences. This would imply that our merchants and brokers can take care of themselves in the matter of providing capital for securing opposition to any kind of monopoly; but the helter-skelter style in which the People—though we ought now to drop the capital P—have fled to their government for protection would imply that they have surrendered this doctrine. The recent consolidation, and the ensuing but altogether unnecessary panic among telegraph patrons, have given the languishing postal-telegraphic scheme a new life, for if anything could accomplish that feat the late monopoly boom, of all things in the world, and seven or eight bills favoring postal telegraphy introduced or revived in congress in ten consecutive days, ought to do it. Our opposition thus far to governmental control of the wires has been based mainly on the supposition that there would always be at least two competing private companies; but, without joining in the general panic, we must admit that, since the marvelous "new deal" and consequent obliteration of all competition, we believe that one monopoly is no better than another; and, if we must choose between two evils, let us by all means

choose the lesser one, the government. That will, at least, remove the constant annoyance and hardship imposed upon both the public and the operators by the insincerity of "competing" companies, in whose protestations we have been guileless enough to believe, and the chaotic disturbances of a "consolidation" every twelve months or so. A system of politico-commercial-postal telegraphy will be bad enough for all, but far better than a single private company. We still hope that by the private pluck and enterprise which have made the name "American" famous, we may be saved from either a private or governmental monopoly, for we are satisfied that a proposition to extend the jurisdiction of the government to purely commercial affairs is repugnant to our institutions and the good sense and independence of the people of this continent. At the same time we must recognize the fact that the gross abuses of power by overgrown monopolies—which have already been substituted here for the "Barons" in the Old World, and which can only apparently be reached by the strong arm of the sovereign power—challenge us to so amend the powers of the administration that it shall no longer be confined to purely legislative affairs. These are dangerous doctrines, however, and a trifle un-republican; and, while self-preservation may be the first law of nature, we hope that the pregnant facts will not be lost sight of.

Meanwhile, if this postal-telegraph agitation is to continue, it will be to the interest of every telegrapher to urge an immediate reform of the civil service, a system now existing which should never be applied to the telegraphs. Men should be selected for their character and qualifications; appointed to office without political "indorsements;" be free from political assessments at election time, and kept in office and promoted for their ability and fidelity, irrespective of political turmoil.

THERE is at least one good result which will flow from the dispute in the Boyce case. It will lead the members to take more interest in their alleged insurance organization, and to provide better means for assuring the problematical one thousand dollars to their heirs. It has grown to be a great concern which, we have often thought, demanded the individual attention of at least one competent executive officer, who should be paid a fair salary. The time is certainly not far distant when—if the Second Division grows as we hope it will—such a directing officer will be absolutely necessary; but we shall be very much mistaken if the operators do not look at their hard-earned dollars a long time before paying them out for that kind of executive talent which decides that, because a fellow-member "coughed a good deal," he necessarily died of consumption—even when a physician swears that the patient died of some other disease—and that because an ill-starred and presumably friendless youth dies fifteen months after he is duly accepted and admitted, he must be stigmatized as a fraud, and his widow and children robbed of the benefits which he, in life, fondly imagined his thrift would bring to them. It would be well for members to send their proxies in future to persons other than incompetent officials when questions of this nature are to be considered.

WHEN the directors of the various companies looked out of their windows and saw the havoc wrought on their property by the storm of Jan. 21, and reflected on the possibility of \$300,000 in

the aggregate for repairs, together with the enormous consequential damages arising from a total suspension of their regular business, they doubtless admitted to themselves that it would be a capital idea to try the subterranean system of telegraphs. Frost contracting the wires, sleet sopping the foundations of the poles and old Boreas jogging along from the north-west at the rate of forty miles an hour are bad for overhead lines. To the artistic eye New York, on that memorable day, afforded a glorious Winter scene. The icy coating on wire and pole produced everywhere a forest of glimmering crystal, while myriads of icicles made some of the streets look like caves of stalactites. Then, like a transformation scene, the structure came down with a grand crash, and the picture which might have graced Fairyland itself lay in the streets a tangled and gnarled mass of splintered wood, iron and ice. The Arctic spectacle was completed by the irrepressible small boy—who, by the way, ever on mischief bent, enjoyed the confusion immensely, and gayed the overworked policeman into a state of frenzy—going to school in the suburbs on skates.

ON the 21st of February, 1878, Hon. William Orton, President of the Western Union Telegraph Company, insured his life for \$5,000, in the Connecticut Mutual Life Insurance Company, and on the 22d of April—two months afterward—he died. That insurance company, like some of the members of the T. M. B. A., forgetting that "in the midst of life we are in death," disputed the claim with the orphan children of Mr. Orton, intimating that he died "too soon" after his admission. Public sentiment not only showed its disgust for this kind of "insurance" but the Court, on the 21 ult., sat down heavily upon it, and awarded to the children of Mr. Orton \$5,000, with \$767.91 added as interest \$5,767.91 in all. We commend this piece of news to the "managers" of the Telegraphers' Mutual Benefit Association, with the additional reminder that John G. Boyce was accepted by them in August, 1876, paid his regular assessments for fifteen months, and died in November, 1877. His widow was also assessed two dollars after he died, which she paid in good faith. Mr. Orton was insured two months before he died, but the Court has promptly shown its detestation of this principle of stealing the pennies from dead men's eyes. Mr. Boyce's claim of \$1,000, with legal interest for three years and three months, now amounts in round numbers to \$1,207.

OUR esteemed contemporary, the *Journal of the Telegraph*, makes an earnest, eloquent and final appeal in behalf of the Second Division of the Telegraphers' Mutual Benefit Association. But eloquence must fall very flat on a body of men who understand that the chances are about even that a dispute will be raised, after their death, with the widow and fatherless children. Let these men attend to the First Division before they attempt a Second Division, and let them pay the Boyce claim in an honorable way. Then, while enforcing the most stringent measures for keeping out bad risks, let it be distinctly understood that, when once a certificate has been granted to an operator and he hobbles up on his crutches to pay his assessments for fifteen months, and after his death his poor widow is assessed two dollars which she sorely needs for food and kindling wood, his claim is a valid one. This would create confidence in the First Divi-



sion, and then it will be time enough to start a Second Division boom.

As the present generation of telegraphers and firemen are familiar only with the little electrical contrivances for fire alarms, it may not be out of place to take them to an old "look-out," nearly in ruins. At 3 o'clock on Sunday morning a sharp wind whistled through the iron stairway railing, and hummed beneath the wide-mouthed bell of the Spring street tower. It was bitterly cold ascending from the streets, above the house-tops, and away up into the fireman's eyrie. As the circuitous path up the steps brought the observer to face with every point of the city, a singular scene presented itself. All was so still and dark; the rivers silently rippling like a silver belt around the city, the bleak-like houses isolated on the Jersey shore, the snow-clad sides of the Palisades standing out clear against the heavy, threatening clouds, and, within all, the compact mass of densely-crowded houses. Within the little tower the night watchman untiringly kept his vigil, walked with an unceasing regularity around the narrow room, his eye scanning the surface of roof tops and chimneys, in search of an unusual glare or suspicious smoke. The duty was all absorbing, and no one dared distract his attention from a vigilance, the lapse from which might involve immense destruction. An old fireman's heart had been made glad by this sudden step backward of human progress. He was put at his old occupation of thirty years ago, before the telegraph and the telephone, and all other new-fangled notions had rendered his dear old watch-tower superfluous. To the untrained eye the thousand and one volumes of curling smoke seemed to indicate fire everywhere, but to the veteran fireman, as his keen eye swept over the city, everything was clear. He said that when first returning to this duty, after being "out of practice" for a quarter of a century or so, he experienced a little difficulty, the face of the city had altered so much; but when it was a part of his routine, he could recognize almost every wreath of smoke that daily rose from thousands of smoke stacks. So, even in its temporary loss, does the wonderful telegraph teach us "What God hath wrought."

MR. P. B. DELANY is not only a genius in the way of inventions, but he also wields a powerful quill, and we have been much gratified to see him hold his end up so skilfully during the past week in the columns of the *New York Herald*. That paper seemed to be laboring under the impression that Judge Blatchford's decision in the Page patent case secures to the Western Union exclusive control of the Morse telegraph in this country; but Mr. Delany, in his own quiet, lucid style, soon set the *Herald* right, concluding his letter as follows: "This (the Delany patent) will necessarily form the nucleus of all future competition to the Western Union Company, and already efficient measures are being perfected which will result in the establishment of lines throughout the country, the ownership of which will be so vested as to prevent consolidations or alliances with the would-be monopoly." Mr. Delany has a quiet, modest way of doing things, but they reckon ill who leave him out.

THE very marked increase in the circulation of THE OPERATOR is beginning to have its effect upon our advertising patronage. In addition to the usual announcements of telegraphic and electrical manufacturers and the like, we to-day publish advertisements of several houses in other

lines of business. We hope our readers will find in the articles offered something which they need and, by sending in their order and mentioning THE OPERATOR, demonstrate to our new advertisers that the paper has a large circulation, and that it will be to their advantage to let its readers know what they have to sell. We will consider it a great favor if our readers, in writing to an advertiser, telegraphic or non-telegraphic, will *always* say that they saw the advertisement in THE OPERATOR.

ALREADY the hard times seem to have struck the "Professors" who make a business of teaching the doubtfully remunerative art of telegraphy. Mr. William Worth, an account of whose hurried flight will be found in another column, evidently believes in taking time by the forelock, striking while the iron is hot, etc., and has consequently left many sorrowing students behind him, whose cash he had collected in advance. There is a good deal of uncertainty and more sarcasm in the *World's* dispatch, which says that Worth is a swindling telegrapher who has "operated" all over the country. Our own impression is that Mr. Worth has "operated" more with the pick and shovel than with the mystic key.

MR. J. D. ROBERTS, of Brooklyn, N. Y., desires to study the science of electricity, but finds the mass of books on the subject so large and varied that he is wholly at a loss where to begin, and asks our advice what to study in order to obtain the greatest possible amount of practical information in the least time. The best work we can recommend is "Pope's Modern Practice of the Electric Telegraph;" price, \$2. There are several other books, but this is, in our opinion, the best one to commence with. Of course, this or any other book can be ordered of us, and will be mailed, prepaid, on receipt of the price.

IN announcing in our last issue that appropriations for space at the International Exhibition of Electricity—to be held at Paris, between Aug. 1 and Nov. 15 next—will be received until March 31, we omitted to state that diplomas and medals will be accorded by a jury. All communications relative to the exhibition must be sent to "Le Commissaire Général de l'Exposition Internationale d'Électricité, Palais des Champs-Élysées, porte No. IV., à Paris, France." No charge will be made for space.

FOR ten years, operators in England have been "classified," but they have recently petitioned the Postmaster General for the abolition of classification. The petition prayed, also, for a number of other improvements in the service, including a clause asking "that three weeks' annual leave of absence be granted to all 'clerks' receiving 16s. to 40s. per week, and one calendar month to those receiving more than that amount." The Postmaster General declined to receive the deputation.

THE friends of the new scheme of monopoly assert that it will lead to an improvement in the condition of the telegraphic service of the country, and of the operators in general. The concentration under one system of the forces now employed in keeping up three systems will certainly enable the Consolidation to reduce its expenses greatly, but the story that it will help the operators' condition in any way is one which could be more appropriately told to the marines.

DISPATCHES from Canada intimate that the

Dominion Government desires to assume control of all the Canadian telegraph lines. It now enjoys the luxury of a superintendent of government telegraphs, owns a regular cable steamer, and only a few months ago laid several cable lines between the north and south shores of the gulf of St. Lawrence, the Island of Anticosti, Cape Breton and the Magdalen Islands.

THE latest "arrangement" in the way of a monopoly is between the various Atlantic cable companies. This contract contravenes, of course, the terms upon which the French company was permitted to land its cables on our shores, as it was expressly agreed that consolidation with any other company would nullify all its privileges here. But the small matter of a legal prohibition counts for very little nowadays.

THE great proportion of expert and reliable operators in the South are well represented by Mr. William D. West, whose portrait we reproduce in our columns to-day. Mr. West is deservedly popular with the working members of the profession, North and South, and is highly esteemed by the officers of the Western Union Company.

LORD JOHN LENHART has not said much since the new deal. Can it be possible that the noble lord has been swamped? But, still, "It may be best, just in the happiest, sunniest hour of all the voyage, while eager winds are kissing every sail, to dash against the unseen rock, and in an instant hear the billows roar above a sunken ship."

Do coming events cast their shadows before? What does our esteemed and scientific, though somewhat tardy, contemporary, the *Journal of the Telegraph*, mean by printing, in its last issue, the name of "United States of America" in its "Table showing the extent of Government Telegraphs in various countries?"

THE coming fortnight includes the anniversaries of the deaths of two men renowned in the history of electrical science. The illustrious Galvani died February 5, 1799, and Dr. Joseph Priestly, the eminent scientist and friend of Franklin, died February 6, 1804.

NEXT Friday will be the eleventh anniversary of the transfer of the telegraph in England to the government. The "Telegraph Act" was passed July 31, 1868, but it took until Feb. 4, 1870 (two years), to complete the transfer.

OWING to the pressure on our columns, in consequence of the great developments of the past few weeks, a number of interesting articles, personal and general, have been left over for some future issue.

A merchant can now be connected through the telephone exchange with a neighboring restaurant, and, by ordering his meal in that manner, continue working in his office while his steak is being cooked.

THE rumor that the Prince of Wales would preside over the Congress of Electricians, at Paris, is declared incorrect.

MR. J. A. WURZBURG, of the W. U. office, is Chicago agent for THE OPERATOR and for the books we publish.

WESTERN UNION stock is quoted at 118, A. U. at 84 $\frac{7}{8}$  and A. & P. at 48 $\frac{1}{2}$ . Last issue they were 101 $\frac{5}{8}$ , 90 and 47, respectively.



### Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible ;  
Theoretical as far as necessary.

BY T. D. LOCKWOOD.

#### Q. 83. What is the Wheatstone bridge?

A. The Wheatstone bridge, though usually classed with galvanometers, and explained under that head by most of the text books on electricity, is, strictly speaking, not a galvanometer, but a system of measurement; or, an arrangement of circuits whereby a galvanometer can be most advantageously employed. It was discovered by Christie, and described by him in the *Philosophical Magazine*, in 1836. But it was not much noticed or used until introduced by Wheatstone, in 1843, in a paper forwarded to the Royal Society, describing several new instruments for electrical measurements. Although previously described by Christie, it is almost universally known as Wheatstone's bridge, or balance. It is usually represented in diagram with the wires arranged in the form of a lozenge. The lozenge is composed of four wires which, for convenience, we will call A, B, C and D. Two of the opposite corners of the lozenge are connected by a wire with a galvanometer in circuit, and the other two opposite corners are respectively connected to the two poles of a battery. The two wires which converge to a point at the left hand we will call A, and B, and the two that converge to the right hand we will call C, and D. Fixed resistances are inserted in the branches A and B, an adjustable resistance in the branch C, and the resistance to be measured in the branch D. When all of the resistances are equal and the battery circuit is closed, the galvanometer on the cross wire will not be affected; because, as all electrical currents are caused by a difference of potential, and the two points connected by the galvanometer are under those circumstances, at the same potential, it is obvious that no current will pass through the cross wire and galvanometer, there being no force tending to cause a current therein. Again when branch A bears the same proportion to B that C does to D, no current will pass on the cross wire; because the battery current having divided at the point of divergence of the wires A and B in inverse proportion to the several resistances of those branches, that proportion of the current which is on each branch, on arriving at the crossing point of the bridge, will still be at the same potential. But if the resistance A does not bear the same proportion to B that C does to D, the needle will be strongly deflected. Hence it will be readily seen that unknown resistances can be accurately measured by inserting them, for example, in the branch D, and varying the other resistances—chiefly that in the branch C—until the needle stands at zero. The proper proportion is now restored, and the unknown resistance is ascertained by a simple calculation in proportion, or the rule of three. For instance, we will suppose that in A we have a resistance of 10 ohms; in B, 100 ohms. We then insert our unknown resistance in D, and a rheostat, or resistance box, in C. When we close the battery circuit, the needle deflects. We then vary the resistance in the box until the needle remains at zero. To obtain this result we have unplugged 200 ohms. Therefore, as 100 is to 10, so is 200 to 20—the resistance required. This is merely given as an illustration of the system. In practice, to measure a resistance within the range of the rheostat, the resistances in the branches A and B are made equal, because when they are equal the galvanometer is most sensitive. But, as it will readily be seen from the foregoing example, resistances both of extremely great and extremely small magnitudes can be measured by this system.

The bridge apparatus generally embraces a rheostat and galvanometer with two keys, one to make and break the battery circuit; the other to make and break the bridge wire. The rheostat is made with the branches A and B, each consisting of three coils—10 100, and 1000 ohms respectively: the arm C is a set of coils, varying from 1 to 4,000 or 5,000 ohms; while the arm D is provided with two building posts for the reception of the resistance to be measured. Circuits which only have one end within reach can be measured by putting one pole of the battery to earth, the branch C also to earth, and extending the branch D to the circuit to be measured, which must also be grounded at the distant end. In using this apparatus, and the resistance to be measured is approximately known, the proper plugs must be first taken out of A and B. The battery key should first be pressed, then the galvanometer key, making very short contacts with the latter, until the needle is nearly balanced. When the balance is obtained, it should be ascertained whether or not the needle will remain steady when the contact is made and broken.

Almost any good galvanometer can be used with the bridge system of measurement. The bridge is not now exclusively used for measurements, but has been utilized also in duplex telegraphy, and in the construction of sensitive burglar alarm telegraphs.

#### Q. 84. What is meant by the "constant" of a galvanometer?

A. The constant of a galvanometer means simply the deflection of the galvanometer needle, obtained through a standard resistance by a standard battery. The expression is used more frequently in England than in America; and there, as explained by Kempe, the term "constant" is applied to "the product of the deflection in degrees, and the resistance in ohms, when multiplied together. For example: With a battery, a galvanometer and a resistance of 1,000 ohms in circuit, a deflection of 20 degrees was obtained. The 1,000 is then multiplied by the 20, and the product, 20,000, is called the constant."

If wires are to be tested, the constant is first taken, as above, after which the wires are inserted in circuit, one by one. To obtain the results in ohms, the constant is divided by the deflection obtained from each.

#### Q. 85. What is a rheostat? To what apparatus is the name now applied? How is it used?

A. The name rheostat was originally given by Wheatstone to an instrument devised by himself for the purpose of varying at will the amount of resistance in a circuit.

Two cylinders, one of metal and the other of some non-conducting material, were arranged near each other, so that a fine German silver wire could be rolled and unrolled from one to the other, the resistance of the wire being known.

When the fine wire was all rolled on the metal cylinder it had no appreciable resistance, as the current would travel through the mass of the roller; but, when the wire was wound on the wooden, or rubber, cylinder in grooves prepared for it, the current was forced to pass through the entire length of the wire unrolled. By this means resistance was added or taken from the circuit. This apparatus is now scarcely ever used, but the name survives, and at the present day when we speak of a rheostat we mean a set of standard resistance coils, arranged together in a box and used for electrical measurements. Coils of wire, varying in resistance, for instance, from one-tenth of an ohm to five thousand ohms, are arranged in a box, their terminal wires being permanently connected together by a series of stout brass plates on the ebonite cover of the box. Conical brass plugs, inserted between the brass plates, serve to throw the coils in and out of circuit.

When all the plugs are in, and the resistance-box is in circuit, the current takes the short path through the brass plates and the plugs; but when any plug is withdrawn the short route between the two brass plates which that particular plug connected is broken, and the current is consequently forced through the coil below, and the resistance of that coil is added to the circuit. It will thus be seen that, by varying the arrangement of the plugs, the resistance may also be varied almost indefinitely. In making a box of resistance coils, thick wire should be used for the small

resistances, for two reasons: first, they are easier to adjust; and secondly, they are less likely to become deranged by powerful currents.

The wire used must be of some metal which is not easily affected by changes of temperature. German silver is generally used.

The wire is insulated by two coatings of silk, and is wound double, so as to eliminate self-induction, and also that it may not affect galvanometers in its vicinity. When coiled, the bobbins are soaked in melted paraffine, which maintains their insulation. The high resistances are made of fine wire, in order to economize space.

The following precautions are necessary in using resistance coils: Keep the brass plugs clean and bright; because, if dirty, they will not entirely cut out the coils. When a plug is inserted, do not simply push it in the hole, but give it a twist, and thereby insure good contact. Before commencing to use a rheostat give all the plugs a twist, to be sure that none of them are loose; and, finally, touch the brass plugs as little as possible with the fingers.

#### Q. 86. Give some simple method of measuring resistance.

A. The earliest method of measuring resistances was by using a common galvanometer multiplier, or a sine or tangent galvanometer, to place the resistance to be measured in circuit alternately with a standard resistance. If the deflection remained the same, in both cases, it was assumed that the resistances were equal. The difficulty in this method was that the electromotive force and internal resistance of the battery were supposed to remain constant, a condition which they rarely fulfill. The desire of obviating this difficulty was the cause of the introduction of the differential galvanometer and Wheatstone bridge—in both of which instruments the result is attained, irrespective of battery variation. The differential method was much used by Becquerel and others at one time, but it is entirely superseded in England by the bridge method. In the United States, the method that happens to be most convenient at the time is generally used. As the rheostat is now often made with a switch that can be instantly moved from the standard resistance to the resistance which is to be measured, the objection to the substitution method is substantially removed.

To measure resistance by any ordinary galvanometer, using resistance coils, we must first connect up the galvanometer in circuit with the resistance to be measured and a battery sufficient to produce a good deflection. Note the deflection produced, then substitute the rheostat for the unknown resistance, and unplug resistance until the needle shows the same deflection as before. Add the figures on the holes unplugged, and we have the required resistance. If we use the rheostat provided with the switch, all we have to do is to throw over the switch, and we can verify the result by moving the switch quickly a number of times. If the needle stands still at the same deflection, whichever side the switch rests, the result is correct. In using a differential galvanometer, we connect the rheostat on one side and the unknown resistance on the other, and vary the resistance in the rheostat until the needle stands at zero. The resistance unplugged equals the resistance required.

In using the Wheatstone bridge system, the unknown resistance is inserted in the side of the bridge, opposite to the variable resistance. If we have any idea what the resistance to be measured should be, we first unplug equal resistances on the first two sides of the bridge, each as near to the unknown resistance as may be. We then unplug resistance on the third side, until the needle remains at zero, when the battery key is pressed down. The resistance unplugged from the comparison coils then equals the resistance required. For example: We have a bridge system, the first and second branches of which each possess resistance coils of ten, one hundred, and one thousand ohms, any, or all of which, may be unplugged at will; the third branch has a series of coils, from one to four thousand ohms, and the fourth has binding posts for the insertion of the resistance to be measured. This resistance we supposed to be about four hundred ohms. The one hundred ohm coils in branches one and two being the nearest figures to the supposed resistance, we unplug them; and, pressing the battery key, find that the needle violently deflects. We then unplug four hun-



dred ohms on branch three, and again press the battery key, when we find that the needle still deflects slightly. We unplug fifty ohms more, and find the needle has now passed the zero point, and deflects to the opposite side, showing that we have unplugged too much. We replace the fifty ohm plug and draw twenty. The needle will now, perhaps, stand at zero when the key is pressed, showing that the resistance required is four hundred and twenty ohms. The reason for withdrawing the hundred ohm coils on the first and second branches is that the galvanometer is most sensitive when all the branches are equal. It is, therefore, as sensitive as possible when the branches are as nearly equal as possible.

When we measure the resistance of a wire, the distant end of which is to earth, we join the near end of the wire to the terminal of branch four, put one end of the battery to earth, and also put the terminal of branch three to earth, and proceed as before.

Q. 87. How may three parallel wires be measured without using an earth?

A. Call the wires 1, 2 and 3. The resistance of each is required; 1 and 2 are connected at the distant end, and the loop measured, the result being, we will say, 300 ohms. We then connect 1 and 3 at the distant end, and, measuring, find the result to be 600 ohms. Lastly, we loop 2 and 3, and, measuring again, find the resistance to be 700 ohms. To get the resistance of No. 1, we add the first two results together—the 300 and the 600 ohms—the sum being 900, which is obviously the sum of the resistances of all the wires; the first being doubled, as it was measured twice. We then subtract the third results from the sum so obtained, deducting 700—the amount of resistance of Nos. 2 and 3—from 900, and find the remainder to be 200. This, divided by 2, because No. 1 was twice measured, gives us 100 ohms as the resistance of No. 1. The resistance of No. 2 is ascertained similarly; that is, by adding the first and third result, subtracting the second and dividing by two; and is then found to be 200 ohms. The resistance of No. 3 is ascertained by adding the second and third results, subtracting the first from the sum, and dividing by 2, leaving the result 500 ohms. That these final results are correct may, of course, be readily proved by adding these together.

#### Induction on Telephone Lines.

To the Editor of The Operator:

SIR: I have carefully read the letter of Mr. T. D. Lockwood, which appeared in your last edition. His explanation agrees with my idea of induction in every particular, but I think the so-called induction can be overcome by other means than a metallic circuit. After having observed the different characteristics of induction, I have something which will, at least furnish better insulation. My idea is as follows: The insulator and pin are put on as usual, with the exception that a piece of No. 8 wire is run up through the centre of the pin, one end of which touches the inside of the top of the insulator, the other end being fastened to a common ground-plate. A piece of rubber tubing, such as is usually used for the prevention of "singing" is fastened to the insulator by a wire passing through its centre. The line wire is then connected to the rubber in the same way as is usual on an insulator.

JAS. J. O'NEIL.

BOSTON, Mass., Jan. 18, 1881.

#### DASHES HERE AND THERE.

Between Melbourne, Australia, and London, England, a telegram passes over 13,695 miles of wire.

The Kansas City Electrical Society has been organized at Kansas City, with Mr. W. H. Woodring as president.

Another sled ran into a telegraph pole at Girardville, Pa., last week, and Honora Dougherty and Mary Carduff were instantly killed.

Salicylica, advertised in this issue, is highly recommended for the cure of rheumatism and also in the treatment of telegraphers' paralysis.

The Duke of Northumberland intends to introduce the electric light at Alnwick Castle, and if successful it will, no doubt, be used in other English houses.

Professor Graham Bell is said to have discovered that melted sulphur acts similarly to selenium with respect to electricity, but only at a temperature below which it becomes viscid.

In consequence of the disastrous effects of the storm on the telegraph wires, the St. Paul (Minn.) Pioneer-Press received some of its New York news a week last Friday night by way of New Orleans.

The news of the election of Gen. Garfield reached Santiago, Chili, on the 4th of November, two days after the election. The dispatch went via England to South America, thence across the Andes to Montevideo and thence to Santiago.

According to a London journal, the orange specks of the gaslights along the Thames embankment were seen to shine dimly through a recent fog while the brilliant white glare of the electric lamps was indistinguishable.

Liverpool, England, has decided to adopt the electric light at a portion of the new dock system at the north end of the city, at an estimated cost of \$10,000. This is to be an experiment, and upon the result will depend the extension of the light over the docks generally.

The *Student's Journal*, published by Andrew J. Graham, 744 Broadway, New York, is a handsome sixteen-page paper, devoted to the Graham system of stenography, and will be found of great value to those familiar with the Graham system. The subscription is \$2 a year.

The electric belts advertised in the present issue by the Electric Appliance Company, No. 2 Bond street, this city, are very highly spoken of by physicians and those who have used them. The company forwards free, on application, a catalogue giving an immense number of testimonials.

The World Manufacturing Company are not unknown to many of our readers, although this is the first occasion on which they have inserted an advertisement in THE OPERATOR. Their goods have a large sale because they are what the public want and sold at a low price. The company offers liberal inducements to agents.

Nature says that an electric cable manufacturing firm in Neuchatel has made a highly important discovery in practical telegraphy. After a long and expensive series of experiments, they have succeeded in devising a method of laying cables whereby the induction of the electric current from one wire to another, although the wires are in juxtaposition, is prevented.

According to the Chicago papers, that progressive city is to be made thief-proof by a greatly extended system of police alarms. The central station is to be made a complete telegraphic exchange; the city is to be divided into telephone alarm districts—horses, wagons, and men in readiness being stationed at a central point in each district.

One of the officers of the steamship City of Berlin states that he has received the current from a Siemens' dynamo-electric machine through the legs, trunk, left arm, thumb and one finger. He says he did not like the sensation, but that he could have endured it if necessary, although the current was capable of giving four lights of 400 candle-power each.

The severest sleet-storm ever known in Eastern Nova Scotia occurred on Sunday and Monday, the 16th and 17th insts. The W. U. lines were prostrated for about fifty miles, ice forming on the wires from one to three inches. Communication with the West was interrupted from Sunday until Wednesday evening, the longest break ever known on that section.

The case of the Western Union against the Pennsylvania Railroad, in the matter of the removal of the telegraph company's wires from the railroad, came up in the United States Court, at Philadelphia, on the 17th ult., but argument was postponed until the following Monday (24th). On that day argument was resumed, and completed on the 26th ult., when the judge announced that he would reserve his decision.

Mr. C. J. Kintner, of the United States Patent Office, believes that, judging from what has already been done in various applications of electricity, within the next decade we shall find our large telegraphic corporations operating their elevators, supplying motive power, heat and light throughout their buildings, and electricity for their lines from one common source of power.

A cable-laying ship possibly represents the highest development of marine engineering, for a hitch in the machinery may mean the failure of the expedition. An instance of the perfection to which we have reached is furnished by the cable-ship Kangaroo, which ran recently from New Zealand to St. Vincent without once stopping the engines. The distance of 9,500 miles, supposing about sixteen miles to be run every hour, represents continuous work for twenty-five days—a fairly sufficient testimonial to the excellence of the machinery.

The electric light is rapidly becoming popular in this city. The firm of Fisk & Hatch, which has been paying \$250 per month for gas, is now obtaining far more satisfaction from the Maxim light for about the same amount of money. The Brush Company have just completed a circuit of three miles, which they claim to be the largest circuit yet put into operation by any company. Lamps have been put up along Broadway from Twenty-sixth to Thirty-fourth streets, and they have now thirty-one lights on their "all-night" circuit, twenty-three street lamps and eight private ones.

On the 15th ult. an American District messenger was arrested in this city for stealing a ride on a street car. The lad said that he received ten cents to pay his car fare, but as he "had to divide with the clerk in the office" of the company, he could only ride one way, and was stealing a ride in order to make his trip in time. While the boy was in the hands of the police, the District company sent for his uniform. The police captain would not allow the boy to be stripped, and his parents refused to give up the uniform, which they said they had paid for. The child, who is only 13 years old, worked from 7 A. M. until 10 P. M. without extra pay.

A dispatch from Boston to the *World*, on the 16th ult., says: "William Worth, a young man with several aliases, was arrested here to-day for swindling persons who were seeking a knowledge of telegraphy. It is charged that he has operated all over the country, and that about three months ago hastily decamped from Providence, leaving behind him a large class of young ladies, who had paid their tuition fees in advance. A few months ago Worth opened a school on Tremont street, where he had a large class, but failing to fulfil his promises the students communicated with the police."

The typical small boy of Paterson, New Jersey, has now an abiding faith in the stability of the telegraph lines recently constructed. On the 17th ult. five of these festive youths rode a sled down hill, at a speed of nearly a mile a minute, and brought up suddenly against a telegraph pole. Result: One nose and one jaw broken—this particular victim leaving a fine impression of his upper row of teeth in the pole; nose No. 2 badly smashed; one thigh broken, two legs ditto, and other thankless favors evenly distributed among the five sportsmen, in addition to the shivering of the sled into kindling wood. The telegraph pole still stands there, pointing the cross-arm of scorn at weak humanity.

The annual meeting of the Gold and Stock Life Insurance Company was held in the Western Union Building on the 10th ultimo. The following officers were elected for the ensuing year: President, M. Breslin; Vice-President, D. E. Pike; Treasurer, Ralph W. Pope; Secretary, C. H. Small; Executive Committee, W. H. Collins, C. Wenkel, D. J. Ludwig. The reports of the Secretary and Treasurer show the financial affairs of this Association to be in a highly satisfactory condition. As they have suffered but three losses since the formation of the Association, they are accumulating quite a surplus. It was established on an original principle, and its pronounced success must be very gratifying to the members. Several members gave notice of proposed amendments to the constitution, and the meeting adjourned to meet Saturday, Jan. 31, for revision of the constitution.

On the 12th ult., at London, the French Cable Company approved "an arrangement"—that is all the cable said—with the Anglo-American and the Direct United States companies. Both the latter companies ratified the "arrangement" on the 14th ult.

The parties to this arrangement are understood to be the Direct Cable Company, the Anglo-American Cable Company (with its adjunct, the Erlan-



ger, or old French cable), and the new French line, the Compagnie Generale du Telegraphie de Paris à New York. The latter company, since its establishment a year ago, has honestly competed against the other two companies, which have for a long time been worked together under a pooling arrangement. The division of the receipts is, it is said, to be in this proportion: The Anglo-American Company is to receive sixty-one per cent. of the gross receipts of all the lines, the Direct Cable Company twenty-three per cent., and the French Cable Company sixteen per cent. Each company is to contribute *pro rata* to the joint working expenses, which will include the necessary construction fund, since the average life of a cable is less than ten years. These companies control the whole Atlantic cable system, the Erlanger, the original French competing company, having been absorbed by the Anglo-American several years ago.

## PERSONAL.

J. S. Nearman, of Chenango, N. Y., has been appointed agent at Hilliard, on the S. & A. R. R.

An assessment of one dollar is made by the T. M. B. A., on the death of Anthony Hedley, at Albany, N. Y.

Miss Belle A. Hall, late of the St. Joseph, Mo., A. U. office, has been transferred to the A. U. office at Iowa City, Iowa.

Mr. S. E. Kirke has been appointed agent for the P. D. & E. Railway, at Pekin, Ill. Mr. S. M. Russom relieves Mr. Kirk at Havana, Ill.

The board of trustees of the Brush Electric Light Company gave a reception to Mr. Charles F. Brush, at the Gilsey House, on the 15th ult.

Lawrence Sheridan, the night messenger of the Western Union at Newark, N. J., was attacked by two footpads on the night of the 15th ult., but gallantly put them to flight with his pistol.

James P. Hart, a messenger employed in the Portland, Me., A. U. office, in alighting from a train, January 15, slipped on the ice and the wheels passed over him, killing him instantly.

Mr. C. W. Hurlburt, of North Sydney, C. B., has been called to his home at Delaware, Ont., on account of the death of his mother. The many friends of Mr. Hurlburt deeply sympathize with him in his affliction.

At Philadelphia, on the 12th ult., on motion of Hon. F. Carroll Brewster, Samuel A. Boyle, Esq., was admitted to practice in the Supreme Court. Mr. Boyle was for many years an operator for the Western Union Company.

Mr. Fawcett, the English Postmaster General, who has been staying during the Christmas holidays at Trinity-hall, Cambridge, sent for the telegraph messenger boys at the Cambridge Post-office on "Boxing-day" and gave each of them a small sum as a Christmas present.

We learn from the Lafayette (Ind.) Journal that Mr. Will A. Gibson, the genial and clever Western Union Associated Press reporter, has severed his connection with that office and assumed new duties in the office of the auditor of the Lake Erie & Western Railway.

Mr. Robert Eggleston, formerly agent and operator for the D., L. & N. R. R. Co., at Belding, Mich., has, on account of poor health, been obliged to resign his position. He leaves in a few days for New Mexico to accept a situation on the A., T. & S. F. R. R.

Will some of the readers of the OPERATOR please inform me of the address of J. H. Dunlap, train-dispatcher on the C. P. R. R., P. B., in 1879; formerly from Monton, N. B. His address will be thankfully received by J. L. Conners, N. W. Tel. office, Winnipeg, Manitoba.

Mr. Wm. H. Huff, ticket agent and operator at Mt. Holly, N. J., has accepted a position at Camden, N. J., as train dispatcher and operator for the Penna. R. R. Co. Mr. J. L. P. Eckman has been appointed day operator and ticket agent at Mt. Holly, with Mr. J. S. Baugh as night operator.

Dr. Orazio Lugo, a pupil of Professor Henry, and an electrician, who for the last fifteen years has been experimenting with dynamo-electric machines, has recently taken out several patents for improvements in these machines. Mr. Stephen D. Field denies that there is anything new in Doctor Lugo's researches.

Mr. Geo. V. B. Frost was chosen general superintendent of the Mutual District Messenger Company of this city, limited, at the last meeting of the board of directors of that company, and has entered upon his duties. It will be remembered that Mr. Frost has been for the last eight years with the American District Telegraph Company. His long experience in that branch of public service has gained him many friends, and will be of great value to him in the detail work of this new company.

PHILADELPHIA.—Mr. W. D. Black, late of the Western Union main office, has accepted a position with the American Union at No. 30 South Third street. Mr. Charles Moore has taken charge of the A. U. office at the Stock Exchange, relieving Mr. Dillon, transferred to the main office. Mr. George L. Sparks, night manager of the American Union office at the Continental Hotel, has resigned to take charge of American Union affairs in Camden, N. J. Mr. L. E. C. Moore, of the Western Union, has taken the position lately occupied by Mr. Sparks.

KANSAS CITY, MO.—Mr. W. H. Patton, extra for W. U., has resigned. Mr. Matson, from the West, is here. He puts down a magnificent copy. Mr. Eccles, all-night man, also takes A. & P. report aside from his regular trick. Business is pretty lively of late, the wires from Chicago all being down to the West. E. H. McGinty, who has been working for the A. U., has resigned. The boys are feeling blue over the consolidation.

Richard S. O'Brien, a lineman in the employ of the Western Union Company, ascended a pole at the corner of Flushing and Carlton avenues, Brooklyn, during the storm of the 21st ult., for the purpose of repairing the wires, which had broken. While occupied at the top of the pole, the latter suddenly gave way beneath the weight of wires and snapped in twain, throwing the unfortunate man to the ground with great violence. He was picked up by his associate workmen and died shortly afterward. Mr. O'Brien was 24 years of age and a good workman, and literally died in harness.

ST. LOUIS, MO.—On Christmas eve Mr. E. L. Parmelee, the W. U. all-night chief, was surprised by some of his friends, who presented to him, without any formal remarks, a silver water service consisting of four pieces, each article having his name engraved thereon. Ed's face was an index of his feelings, smiling all over, and his heart was so near his throat that his tongue could not utter the gratefulness he evidently felt. In about an hour after he thought of many an eloquent phrase he might have expressed, and which he will keep in reserve for another occasion. Everybody congratulated him.

OLD TIMER.

John H. Kratz, a Pennsylvania operator, 20 years of age, has been missing since September. Two years ago he learned telegraphy under Mr. Selser, and became a good operator. Subsequently he entered the service of the Philadelphia, Wilmington & Baltimore Railroad, and was stationed at Castleville. While there he was appointed night operator at another place, but not liking it he resigned and left the service of the company about the 20th of September. Getting an order for his pay, he went to Wilmington, Del., to draw it, but has not been heard of since that time. He left his trunk and clothes at the hotel where he boarded at Castleville, and took nothing away with him.

WISCONSIN, MINNESOTA AND DAKOTA.—Mr. J. F. Moore is now agent and operator at Balaton, Minn., on the Chicago & Dakota Railroad. Mr. A. F. Schauble, formerly agent and operator at Verdi, now fills a similar position at Lake Benton, on the same road. Mr. L. H. Hall, of the train dispatcher's office at Sleepy Eye, has taken Mr. Schauble's place at Verdi. Mr. H. G. Smith, formerly agent at Canby, is now agent and operator at Brookings, Dakota, on the D. C. R. Mr. H. L. Wadsworth succeeds Mr. D. H. Moore at Volga, Dakota, same road. Mr. O. W. Berry, formerly agent and operator at Lamberton, Minn., W. & St. P. Ry., is now with the C. & N. W. Ry., Wisconsin division, at Oakfield, Wis.

TOPEKA, KANSAS.—The Western Union force in this city is as follows: Manager, Mr. E. L. Smith; Messrs. W. B. Paddock, F. C. Lacey, and E. A. Bliss, operators. Messrs. Paddock and Lacey work "week about" on report. The W.

U. branch office in North Topeka is presided over by Miss Bessie Larsh. Mr. Geo. C. Sperry is operator at the Atchison, Topeka & Santa Fe general offices. Mr. S. J. Bear is manager of the American Union office. At the A., T. & S. F. depot Messrs. B. McMurtrie and C. Gertisen are train dispatchers, and Messrs. A. W. Parks, C. P. Foreman and C. E. Waterbury, operators. Mr. Frank Mullen is operator at machine shops of Santa Fe Railroad. At the M. P. Railway depot M. J. Nichols and L. J. Walker are operators.

ALLEGHENY VALLEY RAILROAD.—The general offices are at Pittsburgh, with Mr. J. F. Henrici as chief operator, and Mr. J. A. Smith at the superintendent's office. At the dispatchers' office are Mr. Jno. B. Stewart, an old-timer, and formerly our chief operator, but at present day dispatcher, and Mr. Wm. Truby, night dispatcher, with the Burns Bros. on hand to rush the boys with train orders. At Sharpsburg Mr. J. B. Meechs is agent and operator, while at Sandy Creek and Verona Messrs. Cyphers and Simpson fill the same position. Hulton people are accommodated by Mr. Jas. Marshall; Parnassus by J. E. Lang, while at Chartiers H. M. McGeary is agent and operator, with the post-office and express business to recreate on. Messrs. Weaver and Barras are at W. P. Junction; McCutcheon, at Kellys; Crusan and Carmody at Kittanning, and W. H. Hotham at Mahoning. This brings us to Red Bank Junction, where all business from the Low Grade Division is transferred. As agent we find here Mr. W. G. Wattson; day operator, W. F. Morris and W. S. McGeary as "owl."

MINNEAPOLIS, MINN.—Chief Rogers has made his appearance at the office but once for a week or more, and then he was as silent as Grant. 'Tis rumored the dentists are working on him, and that they expect to have his mouth "open for business" in a few days. Mr. Frank P. Brown, late of Chicago, has been taking night report here for the past two weeks, and is highly complimented on his "copy." Mr. Charles E. Schultz, who for the past three years has faithfully served in almost every capacity on either the day or night force here, has been appointed manager of the Stillwater, Minn., office. Here's our hand, "Sir," we wish you success; you certainly deserve it. The operators in this city are waking up to the fact that if they expect to keep posted on matters pertaining to their profession, they must subscribe for THE OPERATOR. Several noble Knights of the Key at "Na," as well as at the different railroad offices in the city, have accordingly planked up their little dollar for 1881 and are happy. Others declare their intention to be made happy in the same manner very soon.

## MARRIED.

WILEY—PUTNAM.—At Sparta, Ga., on Jan. 6, Edward Wiley to Miss Lucy D. Putnam, manager of the Western Union office at Sparta.

MCVEETY—DECKER.—Jan. 5, J. H. McVeety, agent and operator St. P., M. & M. Railway, Maple Plain, Minn., to Miss Sadie Decker.

MOORE—RICHARDS.—At Tolono, Ill., Jan. 19, by Rev. J. P. Mills, Mr. Roger P. Moore, manager A. U. office, to Miss Jennie Richards.

BOYER—SHUCK.—At Pottstown, Pa., Sunday, Oct. 31, 1880, by the Rev. Dr. Evans, Richard L. Boyer, of Philadelphia, to Miss Annie E. Shuck, of Pottstown, Pa.

HANDY—CULBERTSON.—At the residence of the bride's parents, Tolono, Ill., Jan. 13, by Rev. E. A. Hamelton, Mr. W. E. Handy, operator W., St. L. & P. R. R., to Miss Jennie Culbertson.

STEVENS—BORHEK.—Dec. 30, 1880, at the bride's residence, Bethlehem, Pa., Thomas J. Stevens, formerly manager W. U. office, Bethlehem, now connected with the A. U. Company, Toledo, O., to Miss Annie A. Borhek.

## DIED.

O'BRIEN.—On the 21st ult., at Brooklyn, Richard S. O'Brien, lineman in the employ of the Western Union Telegraph Co.

McKENKIE.—Jan. 19, at Hunnewell, Kansas, Mr. W. J. McKenzie, for several years operator for the K. C., F. S. & G. R. R.

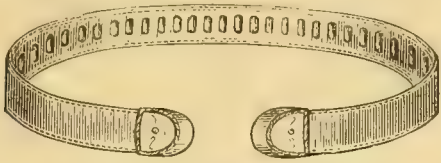
CRANE.—Jan. 13, at Machias, Me., Mr. James E. Crane, formerly operator in the Portland W. U. office, aged 38 years.



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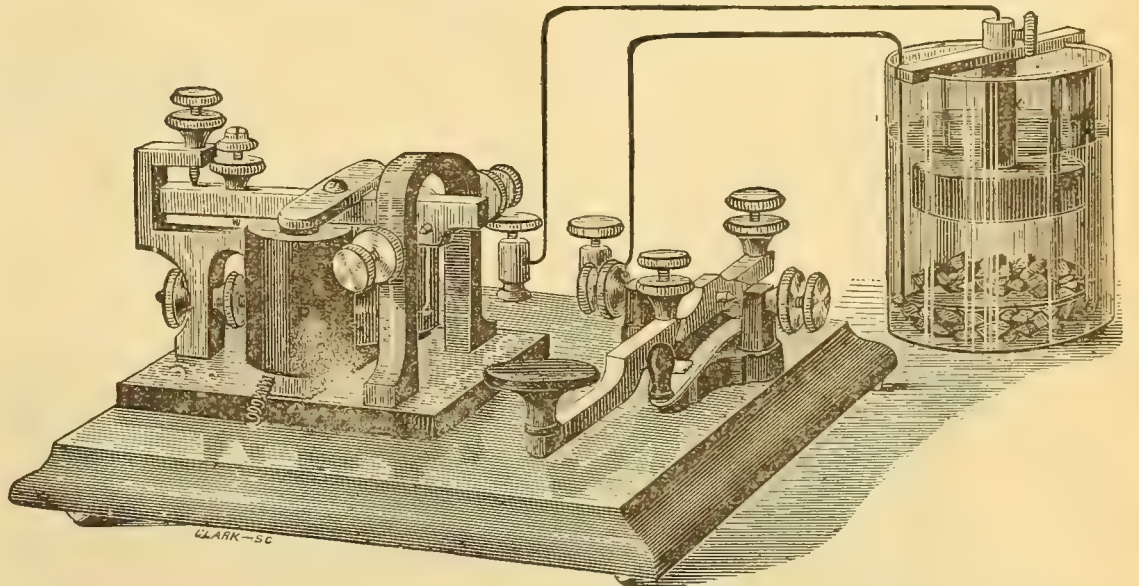
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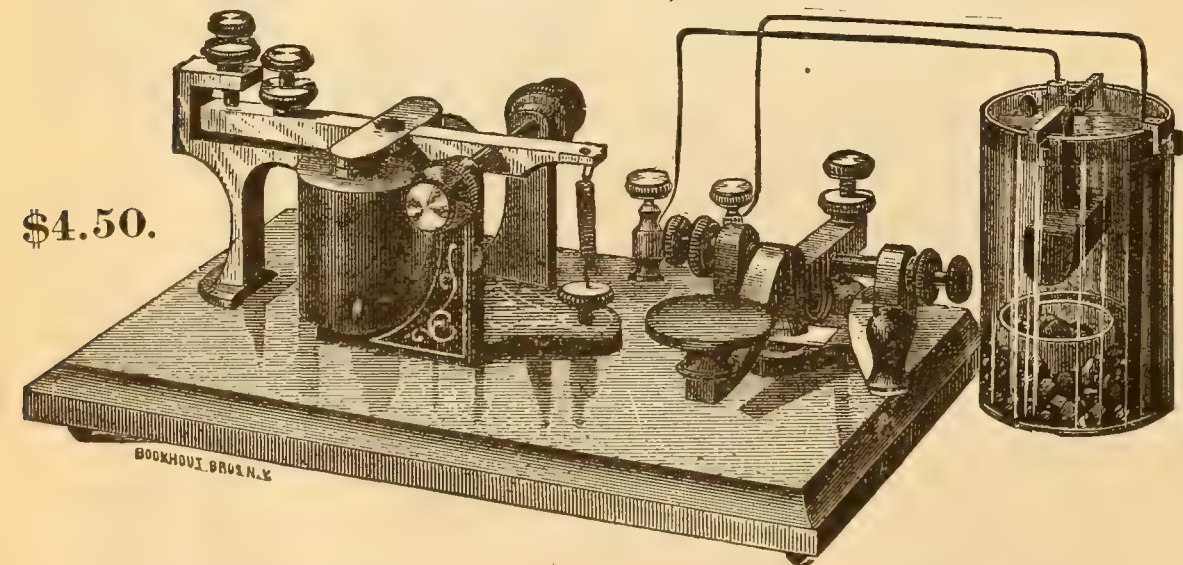
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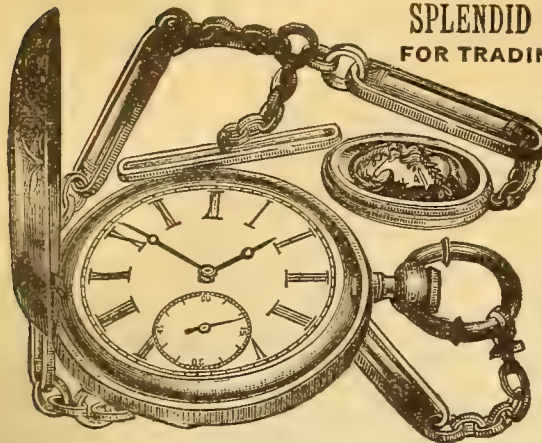
purposes, for which instruments will be leased for a term of years at a nominal rental.

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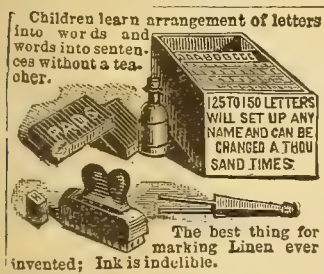




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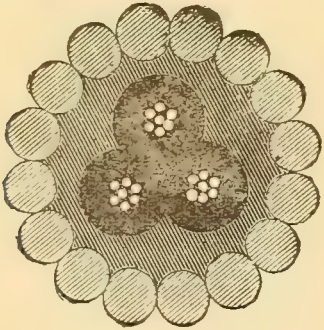
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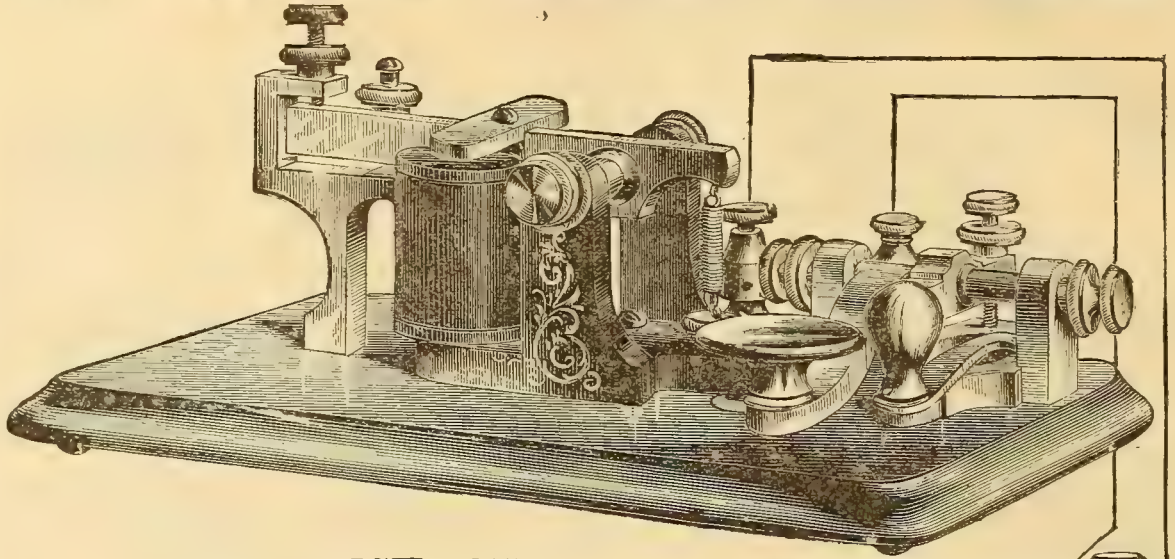
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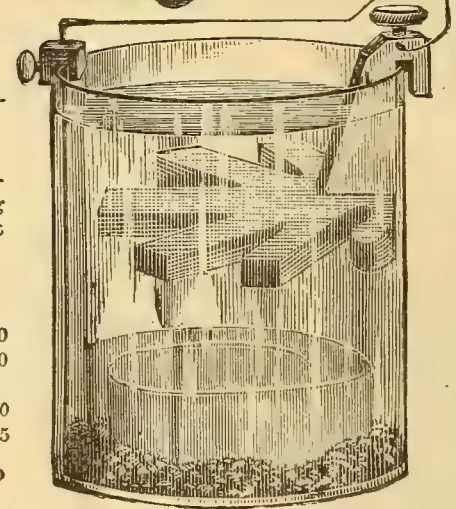
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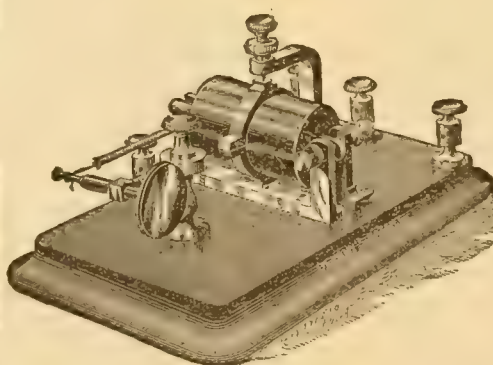
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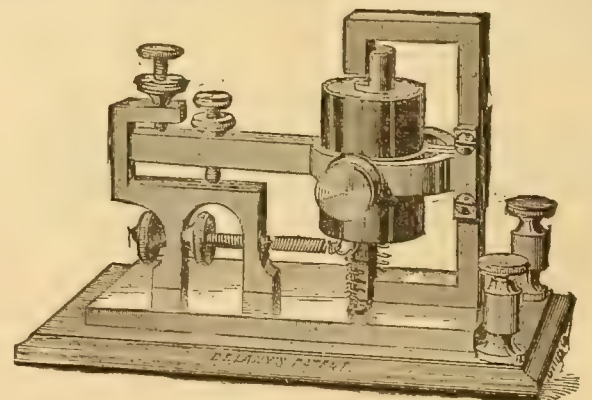
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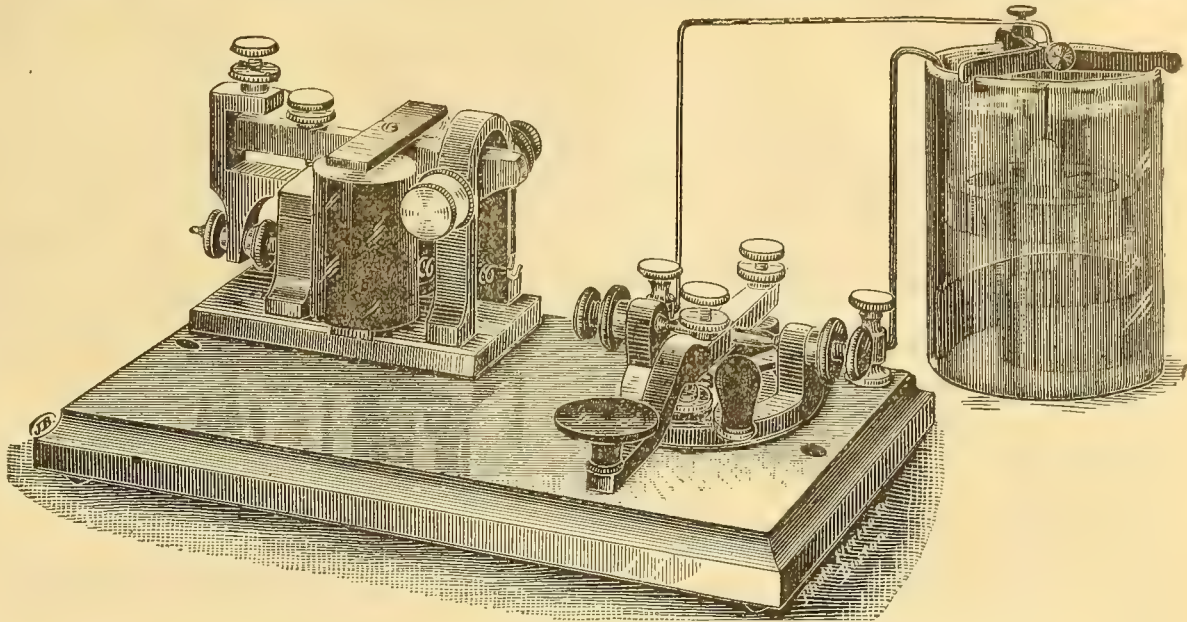
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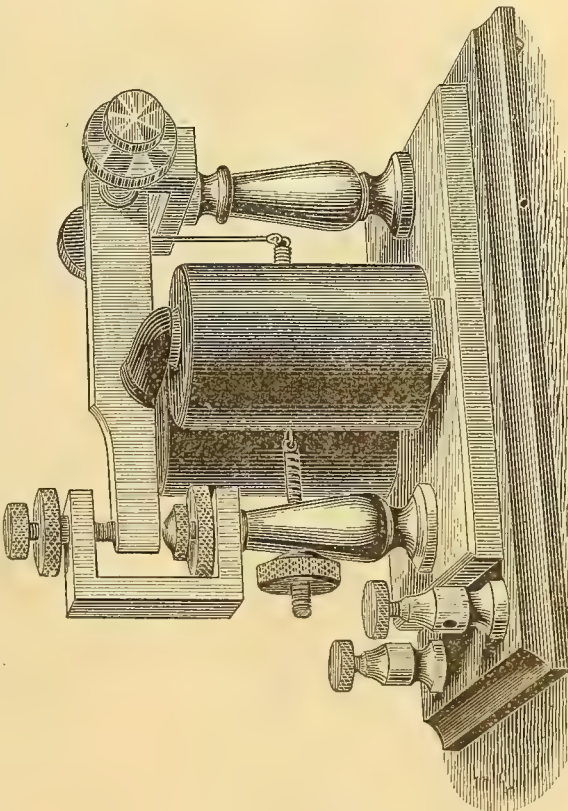
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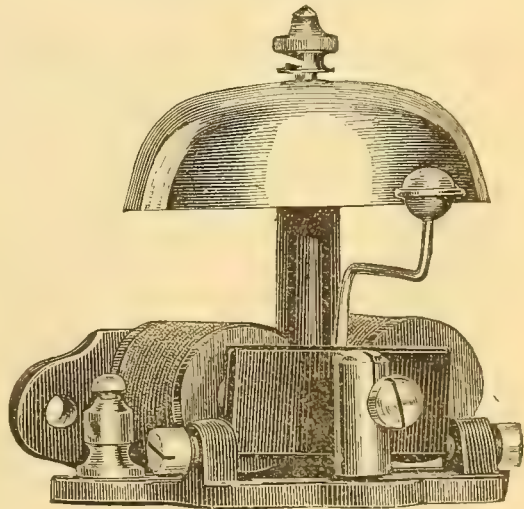
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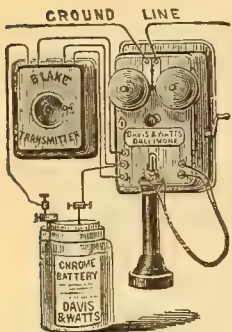
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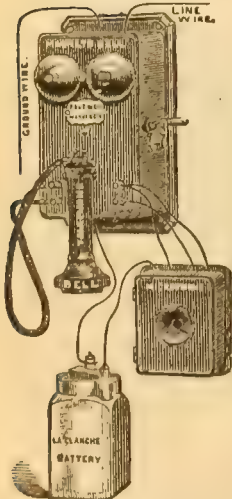
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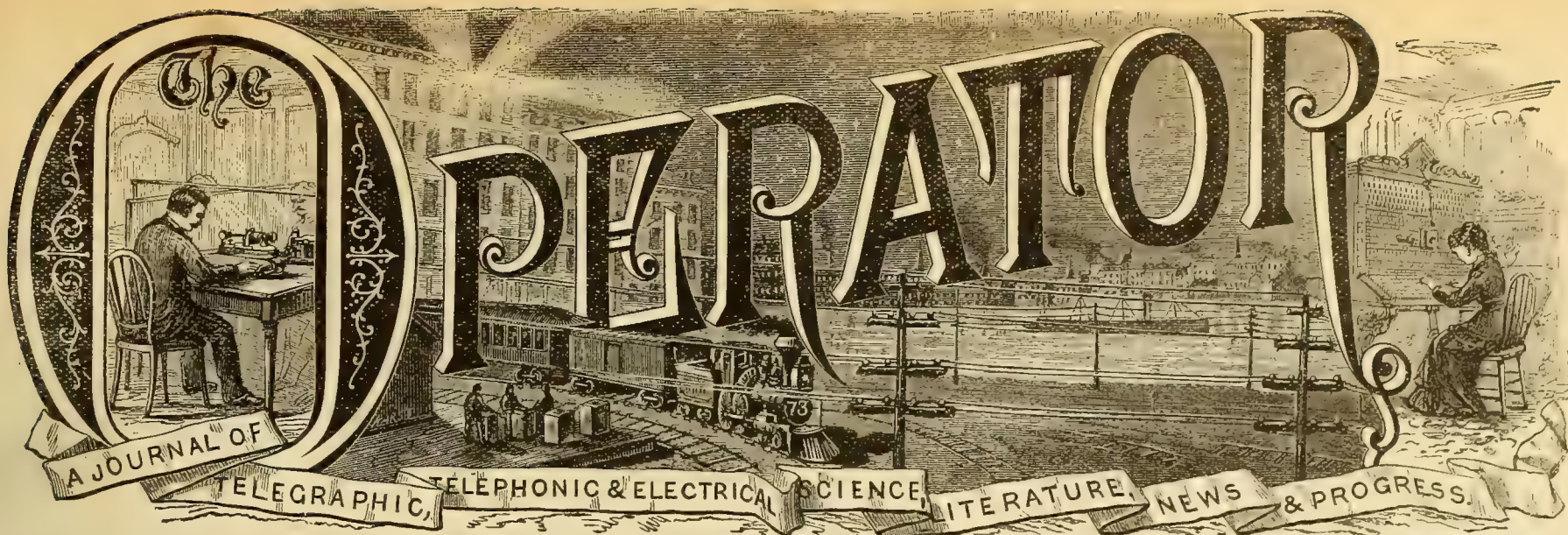
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GENERAL THOMAS T. ECKERT,  
*General Manager of the Western Union Telegraph Company.*



### Thomas Thompson Eckert.

General Thomas T. Eckert, the newly-appointed General Manager of the consolidated lines of the Western Union, American Union and Atlantic & Pacific telegraph companies, was born at St. Clairsville, Ohio, April 23, 1825. He has always been distinguished particularly for his clear insight and a general intellectual make-up which can see two sides of a question at one time, a constitutional tendency to search into the causes which produce certain effects, and his indefatigable industry. These qualities have led him to succeed—but it is paying no particular compliment to General Eckert to say he succeeded—in all the vast enterprises with which he has been connected, until he has come to be considered as a natural leader of men and a benefactor to every telegrapher. He learned telegraphing in 1848, and in the following year was appointed postmaster at Wooster, Ohio, managing the post-office in connection with the telegraph office. It was here—more than a quarter of a century ago—that the swift flowing current of his earnestness and ability first made itself felt. In 1852, young Eckert had constructed the "Union Telegraph" lines from Pittsburg to Chicago; he was superintendent of the lines west of Pittsburgh, and with Mr. J. H. Wade, afterward president of the Western Union Telegraph Company, built most of the original lines in that part of the country. In 1859 he left the business, and spent two years, until 1861, superintending the affairs of a gold mining company in North Carolina.

At the breaking out of the civil war he returned to Cincinnati, but was soon afterward called to Washington and placed in charge of the military telegraph office at the headquarters of General McClellan, accompanying that distinguished soldier as superintendent of the Military Telegraph, Department of the Potomac, with the rank of captain. It was here that Captain Eckert's versatile character showed its matured strength, and from that time onward his promotion was rapid. His steady advancement to be Major, Lieutenant-Colonel, Brigadier General and Assistant Secretary of War, under Edwin M. Stanton, marked the value set upon his brilliant services by President Lincoln and Secretary Stanton, and led to his appointment, in January, 1865, as a commissioner to meet and treat with the Peace Commissioners of the Confederate States, at City Point.

In August, 1866, General Eckert resigned the office of Assistant Secretary of War, to accept the position of General Superintendent of the Eastern Division of the Western Union Telegraph Company. This position he held for nearly nine years, introducing many reforms in the telegraphic service. He found extravagance, and abolished it by his wise administrative qualities; he found chaos in the prevailing telegraphic routine, and reduced it to a method. He built the first trustworthy land lines connecting with ocean cables, and to him is due the credit of organizing the first cable service in this country. There were, indeed, telegraphs before, but he gave us system.

In January, 1875, General Eckert severed his connection with the Western Union Telegraph Company, and accepted the Presidency of the Atlantic & Pacific Telegraph Company, which under his direction soon became largely extended, and in August, 1877, entered into a pooling arrangement with the Western Union Telegraph Company. On the first of January, 1880, he was elected President of the new American Union

Telegraph Company, which in eighteen months constructed over 50,000 miles of wire and developed into the most extensive and powerful company ever established in opposition to the Western Union.

The end of this brilliant enterprise, and the transfer of General Eckert's services to a wider field is a familiar story to all. Speaking of this latter change, the *New York Sun* said, during the past week: "It is to the energy and practical skill of General Eckert that the American Union owes the extended and excellent system of lines which has made it so formidable as a competitor that its alliance has been sought. He planned the system and supervised the work of its construction. We suppose there is no other telegrapher living who could have accomplished this task so promptly, efficiently, and economically as it has been done by Gen. Eckert." The *Tribune*, of the same date, said: "With yesterday's work General Thomas T. Eckert becomes the controlling spirit in managing the telegraph system of the country. For a dozen years he has been recognized, among those qualified to judge, as the ablest telegrapher the business has yet produced. A man of consummate executive ability, cautious, far-seeing, tremendously energetic, he is also known, in the expressive language of Wall street, as a thoroughly square man. What he promises he performs; his word is his bond, and you always know where to find him. He never sought the present consolidation; and the public may be sure that, so long as he shapes its course, its tendency will be only to perfect the work and popularize the service by making it at once cheaper and more certain."

But perhaps General Eckert's best work is yet to come. Before the recent consolidation, two new Atlantic ocean cables were ordered from Siemens Bros., London, England, to be laid during the summer of 1881. The cables are now being made, under Gen. Eckert's arrangements and are to be the nucleus of a new and vast extension of the Ocean Cable Service. It is hoped thus to carry out a long-cherished scheme of developing an efficient system of cheap telegraphy on a grand scale, both by land and sea, and of which General Eckert will be the Aladdin. The consummation of this plan will establish direct special wires between the business exchanges all over the country and put them into direct communication with each other and with the great markets of Europe. It will supply everybody who wishes the control of telegraphic facilities with those facilities, giving private business houses wires and operators of their own whenever they require them, and doing the same thing for newspapers, exchanges, railways—in short, all interests. There will be an efficient cable service stretching from New York to London and from San Francisco to Yokohama, Shanghai, Melbourne and Auckland, and operated in connection with an equally efficient Continental telegraphic service throughout the United States, which will open a new era in the commercial history of this country and of the civilized world. In this way New York must soon become the metropolis of the telegraphic world, and England will reach her Australian colonies through New York, and by our American lines, more cheaply and expeditiously than over English wires through the Red Sea and by way of India.

In this connection there was filed at Albany, on the 19th of January, the certificate of "The American Telegraph and Cable Company." The capital stock of this gigantic company will be

\$20,000,000, with power to increase the same to such amount as may be necessary to build and construct the lines of telegraph and cable contemplated by the company, and the term of the association is fixed for 50 years, from the 18th of January, 1881, to the 16th of January, 1930, and its head-quarters are to be in the City of New York.

Thus, we shall have the poetical "girdle round about the earth," buckle it in New York, and the poet's dream will be fulfilled. No telegrapher can see poetry in the wire on which he toils for his bread; but, for all that, it may not be out of place to illustrate both the prose and poetry of such a vast scheme by an extract from a speech made by the eloquent W. Hepworth Dixon, in London, some years ago: "In the Syrian desert you come on the telegraph line connecting London with Calcutta by way of the Euphrates Valley. You may find a Bedouin Sheikh standing near with a carbine in his hand, a dozen of his servants by his side, his mare and camels in a group apart, and this bit of wire—to him a Sheitan's messenger—running through the wild man's country, and a blackbird perched on one of the telegraph poles, an emblem of that Sheitan which the untamed Arab Sheikh conceives alighted on his throne! That wire, at which the bird pecks and the Arab glares, is thrilling with a thousand human emotions—a word of whispered love from separated hearts; a dying mother's blessing to her son; a desperate merchant's order to buy or sell; a Minister's command to levy war. Who knows? The same thing, in equally poetic aspect, may be seen among the Rocky Mountains, and along the arid plains near Santa Fé. Through desolate hunting grounds on which the Sioux and Osages chase their prey and scalp their enemies, the wire runs forward, wedding the wealth, energy and civilization of New York and Boston with the growing wealth, energy and civilization of Sacramento, San Francisco and Los Angeles. When you see how we girdle the earth in a few minutes—how we throw our chains over the wildest chasms, making the wild inhabitants of these waste places wonder and inquire—the first step toward their better knowledge and their ultimate civilization—can you say there is no quickening spirit in that wire, no poetry or drama in that electric spark? The wire is a poetic and dramatic instrument. It brings the very ends of the earth together, fusing the sum of human emotions into one common sentiment.

\* \* \* \* These things are done in a dozen hours, and in another dozen hours men are talking in their breathless haste and fever of great events, not only in Paris and Berlin, but in the mosques of Cairo and in the streets of Archangel; in the bazaars of Calcutta and on the quays of Rio; by the Falls of Ottawa; in the market-places of San Francisco and in the shops at Sydney. Within a day the news is told, and at the same instant of time every human heart is quivering with the shock of those great events. Just as in the theatre you speak directly face to face with five or six hundred persons, so that every one laughs or weeps under a common impulse—laughing with the same wave of merriment, crying with the same pang of emotion—so the poetical telegraph speaks to the whole world—now become a theatre—bringing joy and sorrow, exaltation and remorse, to every kind and race of men."

The "quickenings spirit" of such a dream and the hand to wave the magic wand above all is General Eckert's; and, if his plans can be consummated, it will be at no distant day.

General Eckert's stalwart regard for his friends, and none are friends who are not deserving, has endeared him to the working force; and every operator will rejoice to see such a man coming from their own ranks to teach the world "those inspiring deeds by which Man conquers men."



### The Telegraph Agreement.

THE CONTRACT FORMALLY RATIFIED BY THE STOCKHOLDERS AND THE WESTERN UNION IN FULL POSSESSION OF ITS PURCHASED LINES—CHANGES IN THE WESTERN UNION DIRECTORY. Although it was generally understood that no action would be taken in the matter of ratifying the agreement of consolidation between the Western Union, American Union, and Atlantic & Pacific telegraph companies before the 5th inst., the public was surprised on the 3d inst. by the announcement that the transfer was 'legalized' and formally made upon that day. No reason was given for this anticipation of the stockholders' meetings, which had been called for the 5th inst., but the general opinion is that it was done to forestall any possible prohibitory action by the legislature. It was a perfectly legal transaction, however, since the law permits a corporation to secure the approval of the stockholders either by a vote of three-fifths in favor, cast at a meeting called upon sufficient notice; or at any time by the consent in writing of the same number. As Messrs. Vanderbilt and Gould alone control more than three-fifths of the stock of all three companies, there has never been any difficulty in complying with the statute on an hour's notice. On the same evening, American Union and Atlantic & Pacific blanks were withdrawn from the various offices, and Western Union blanks substituted. Orders were sent out to all the offices in the country, notifying them of the change, and in many places the signs of the two smaller companies were taken down and Western Union signs put up instead.

Supplementary to this agreement the regular called meetings of the stockholders were held. On the 5th inst. the Western Union stockholders assembled. Mr. Augustus Schell presided, and the first proposition laid before the meeting was 'Shall the capital stock of the company be increased to eighty millions?' Seventy-four and three-quarters per cent. of the stock was represented, and the vote stood 307,189 shares in the affirmative and 100 in the negative. The next proposition was to ratify the action of three-fifths of the stockholders, who on the 3d inst. voted to approve the purchase of American Union and Atlantic & Pacific by Western Union. This was carried by a vote of 307,225 shares against 600 shares. Of the 600 shares voted in the negative 500 were voted by Rufus Hatch, who was present with ex-Judge Fullerton, his counsel, and in casting his vote entered what he said was a protest against the consolidation and the increase of the stock. Nobody seemed to know or care who voted the other 100 shares. Mr. Rufus Hatch then withdrew.

At 1.30 the board of directors went into session, and the contract of purchase was again ratified by their unanimous vote. The resignations of Messrs. Hamilton McK. Twombly and Chester W. Chopin from the board were received and accepted. Mr. Jay Gould was elected to fill the vacancy caused by the death of Mr. David Jones, and Mr. Russell Sage was elected to fill the place of Mr. Chopin. The resignation of General Anson Stager as vice-president of the company, but not as director, was received. General Eckert, who was chosen a director in place of Mr. Twombly, was elected vice-president in place of General Stager, and was appointed general manager of the consolidated lines. Mr. Gould replaces Mr. Twombly on the executive committee of the directors, having as his associates on the committee Dr. Green, ex-Governor Morgan, Mr. W. H. Vanderbilt, Mr. Wilson G. Hunt, Mr. Samuel F. Barger, Governor Cornell and Mr. Augustus Schell.

The stockholders of the A. & P., consisting principally of those who had attended the other meeting, met at 2 o'clock the same day, and by a unanimous vote ratified the terms of sale to the Western Union adopted Jan. 19, and the supplemental agreement of Feb. 3. One hundred and our thousand shares were voted, mainly by proxy.

On the 7th inst., the stockholders of the American Union met and unanimously ratified the consolidation. Over three-fifths of the stock was represented.

No further action is now necessary so far as the fact of consolidation is concerned. The franchises of the Atlantic & Pacific and American Union companies have not been purchased, as the law would not permit that to be done, and those companies remain nominally in existence though actually they have been wiped out. On Feb. 19, when the regular notice to the Stock Exchange will expire, the stocks of the two absorbed companies will be removed from the lists, and the new stock publicly dealt in. On that date dividends will cease on the present stock of all three companies. The market price of the new stock will be the market price at which American Union stock may be selling, that stock being exchangeable at par into the new stock.

Our latest information indicates the selection of the following officers for the consolidated companies: President, Dr. Norvin Green; first vice-president, Gen. T. T. Eckert; second vice-president, D. H. Bates; superintendent of construction and general manager, Gen. T. T. Eckert. Thus the new scheme is fairly launched upon the world, and if the high character and ability of its list of directors and managers may be taken as criteria, its success is assured.

### Efforts to Break the Combination.

The rather difficult job of fighting the "Monopoly" goes bravely on, although the efforts which were recently directed toward preventing the great combination must now be devoted to the immeasurably greater task of breaking it. Legislation has so far signally failed; as, indeed, it must when attempting the monarchical plan of interfering between rival tradesmen. In Pennsylvania and Ohio, the American Union company, which is foreign to both those States, has virtually shut up shop and gone home; and the ridiculous spectacle is presented of the local "statesmen" of those States endeavoring by legislation to compel citizens of a neighboring State to return, open up shop again and carry on a business which the said citizens have retired from. It must thus be clear to all that, instead of endeavoring to make certain men do a telegraph business against their will, these State officials had better devote their energies toward organizing a new company to compete with the surviving one for the business which the retiring company has voluntarily abandoned.

Mr. Rufus Hatch's application for a temporary injunction to restrain the purchase of the American Union and Atlantic & Pacific by the Western Union has come to grief by the decision of Judge Barrett. Attorney-General Ward, of this State, has also rendered an official opinion asserting that the consolidation is perfectly legal. To the level-minded, this has been clear from the first; that is, if we are to maintain a republican form of government.

It is a keen sarcasm on the proposed system of government supervision, to observe that the government officials and local legislators have been the only ones to lose their equilibrium, while those most deeply interested, the bankers, brokers and produce men, have calmly set to work on the only legal, fair and reasonably hopeful scheme of opposition—the organization of stable competing companies.

Chicago has the honor of first recovering from the panic, and of organizing a rival company, under the auspices of her Board of Trade, with a capital of \$1,000,000. They sent delegates to this city, where they had a hearing before the Produce Exchange on the 4th inst. The outcome was the organization, in this city, on the 7th inst., of "The Merchants' Telegraph Company." Mr. A. M. Hoyt, of Jesse Hoyt & Co., was chosen President; Charles R. Hickox, of Hughes, Hickox & Co., Vice-President; George P. Martin, of David Dows & Co., Secretary and Treasurer, and the following Board of Directors was elected: E. R. Livermore, of E. R. & R. S. Livermore; Edward Annan, of Hazelton & Annan; Franklin Edson, of F. Edson & Co.; and David Bingham, of Bingham Brothers. Articles of incorporation were prepared and sent to Albany. In the allotment of the \$1,000,000 capital, Chicago will be given \$500,000 worth of stock, New York, \$300,000; Buffalo, \$50,000; Toledo, \$50,000; Detroit,

\$50,000; Cleveland, \$25,000, and Milwaukee, \$25,000. The shares are to be of a par value of \$50 each, and no merchant can take more than \$5,000 worth. Each of the officers took a subscription list and in five minutes Mr. Bingham had secured subscriptions for \$20,000. The new line between New York and Chicago will be 1,000 miles long, and will be provided at first with four No. 8 wires. Cincinnati merchants are already prepared to tap the proposed line either at Toledo or Cleveland. Messages will be transmitted at the rate of 20 cents for 10 words, against 50 cents now charged by the Western Union, and customers will receive a rebate at the end of the year, after providing for expenses and a sinking fund, out of 40 per cent. of the gross receipts in proportion to the number of messages they send. We fail to see, though, what use this new "opposition" will be to the general public, since it is not intended to enter into any competition with any existing telegraph company, but to confine the business of the company exclusively and entirely to the transmission of Produce Exchange messages. No outside business of any kind will be accepted, nor at any time does the company propose to transact a general telegraphic business. We have not noticed the name of any experienced telegrapher in connection with it, and the report that Col. R. C. Clowery, general superintendent of the Western Union, would assume the presidency of the company is emphatically contradicted by the colonel himself. In addition to the want of experienced leaders, there are other elements of dissension in the new concern. The Produce Exchange men want the facilities extended West, while the Cotton Exchange men naturally want wires South, though both exchanges have approved the general plan.

The New York Petroleum Exchange has appointed a committee to confer with the committees of other exchanges with a view to securing telegraphic facilities independent of the monopoly. The United and Tide-water Oil Pipe Line have their own telegraph wires to the oil region, and a proposition is on foot to secure the privilege of their poles for a special wire for the use of the members of the exchange.

At Trenton, N. J., a bill has been introduced in the Senate, empowering the Pennsylvania Railroad Company to maintain telegraph lines for public and commercial uses.

The American Rapid is pushing ahead, and has just given out the contracts for 8,000 miles of line, the erection of which is to be commenced at once.

At Albany, on the 1st inst., "The Central and South American Telegraph Company," with a capital of \$5,000, filed articles of incorporation. The lines are to run from New York to Texas, and thence to South America.

The Mutual Union Telegraph Company seems, thus far, to be the most powerful opposition. It is pushing the construction of its lines in a business-like way, and President Evans hopes to extend them as far as Washington before another month.

Meanwhile the consolidated Western Union and its friends are not idle. We have before referred to the "Land and Ocean Telegraph Company." On the 1st inst., "The American Cable Construction Company" filed articles of incorporation, at Trenton, N. J. The incorporators are Denis Doren, Wager Swayne, Solon Humphreys, G. P. Morosini and A. F. Calif. The capital of the company is fixed at \$1,000,000, and the company is empowered to lay ocean cables around the world. At a meeting of the Board of Directors, held at Bayonne, N. J., the following officers were chosen: Denis Doren, President; G. P. Morosini, Treasurer; and A. F. Calif, Secretary.

By far the coolest of all the projected new companies is "The United States Postal Telegraph Company," a bill to aid which was introduced in the United States Senate, by Senator Kirkwood, of Iowa, on the 28th ultimo. The bill proposes to authorize this company to construct lines throughout the United States and in all the waters embraced in treaties made with other governments, and to enter and occupy any and all government post-offices for the establishment of stations and the performance of postal telegraph service during 100 years, with a right of renewal. Further, that the company shall be empowered to construct and maintain lines over all public and pri-



vate lands, post-roads, bridges, etc., to the same extent that the government might exercise its "right of eminent domain" for the same purposes; that a Fourth Assistant Postmaster-General shall be appointed to exercise a supervision over the affairs of the company; that the tariff to the public shall not exceed 20 cents for twenty words or less, for any distance in the United States, and where delivery is made through the Postal Department the government shall assume all responsibilities and charge 1 cent per message for drop-letter delivery, 2 cents for carrier delivery, and such rates as may be fixed by the Postmaster General for special delivery when a receipt may be demanded by the sender. The capital stock is to be limited to \$100,000,000, in two series, "A" and "B," of equal amounts, each series limited to \$45 per mile for each mile equipped with one wire, and \$50 per mile for each additional wire. Series "A" is to be dividend-bearing, and shall alone represent the ownership and management of the property. This stock is to be sold to the public. Series "B" is to be non-dividend bearing, and allowed no voice in the management, except in the disposition of property and franchises, and shall be donated to the United States in return for the privileges granted. Thus, this company desires the government as a sleeping partner, with a proviso that, after defraying the expenses, the government must sleep very sound, drawing no interest, and having "no voice in the management."

Another chimerical scheme is "The National Anti-Monopoly League," which has so far done no more than pass resolutions, some of them of a decidedly Kearneyistic turn, and many of them calculated, if they were put into effect, to compel shareholders to withdraw their savings from all telegraph companies.

It will thus be seen that the merchants are the only responsible body of men who have recognized the true exigencies of the occasion, and who have depended solely upon fair means, and disdained to join in the unmanly and un-American cry for government aid. What the American Union did in its own excellent way in eleven months can be done again, and so long as we produce the brain, brawn and capital typical of our country, no "Monopoly," great as it may seem, can have more than a temporary existence.

On Thursday, Feb. 10, President Reed, of the American Rapid Telegraph Company, appeared before a committee of the Produce Exchange and explained the system of his telegraph company, and proposed a plan to the committee by which, with the co-operation of the merchants, the company shall extend its wires to various markets, so as to meet the special wants of the commercial community. The plan suggested by Mr. Reed will be taken into consideration. If it is accepted by the Produce Exchange merchants it is possible that a traffic arrangement will be entered into by the Rapid Company with the new Merchants' line, all the stock for which has now been subscribed.

On Saturday last Judge Truax, on the application of William S. Williams, who holds 100 shares of Western Union stock, granted a temporary injunction, restraining the company from increasing its capital stock, and from ratifying any contract for the purchase of the stock and franchises of the A. & P. and American Union companies. The ground taken by Mr. Williams is that the Western Union is paying \$15,000,000 for American Union stock which is only worth \$5,000,000, and \$8,000,000 for Atlantic & Pacific stock which is only worth \$3,000,000, which causes a depreciation in Western Union stock. The order is returnable on the 17th inst.

#### An Electrical Society Organized.

The preliminary meeting called for the purpose of discussing the feasibility of establishing an electrical society in New York took place, as announced in last issue of THE OPERATOR, at the United States Hotel, on Tuesday evening, Feb. 8. Although the evening was not a pleasant one for walking, the attendance was very much larger than the most enthusiastic friend of the movement had anticipated.

The meeting was called to order at 8.25, by Mr. E. A. Leslie.

Mr. D. R. Downer was nominated for chairman, but said that as Mr. Leslie was in a great measure instrumental, in conjunction with Mr. F. W. Cushing, in bringing about this movement of forming an electrical society, he should have the honor of being chairman of the meeting. Mr. Leslie, however, declined the position, and Mr. F. W. Jones, general circuit manager of the Western Union Telegraph Company, was chosen to preside, with Mr. J. W. Moreland as secretary.

Mr. Jones, in taking the chair, said that he was heartily in favor of the establishment of an electrical society in New York, and that, as the present meeting was called for the purpose of talking the matter over, he would give a brief history of the American Electrical Society of Chicago, and of some of the difficulties it had to contend against in its earliest days. Mr. Jones concluded by saying that the intention to-night was not to spring any particular plan; he had not heard a plan proposed by anybody; it was merely a meeting to think the matter over and give expression to individual views, so that a plan of organization might thus be arrived at. For his part he was in favor of not confining the society merely to the telegraphic branch of electrical science, but to admit into it those in any way connected with or interested in the general subject of electricity.

Mr. Downer said that there was no doubt but that a society of this kind was much needed. Scarcely a day passed that did not bring some one to him asking for information on electrical matters, or on the mechanical construction of telegraph instruments, especially of the more recent forms. If he referred them to books, they had not the time to read them. He thought, therefore, that an electrical society would prove an inestimable boon to the telegraphers in this city, and that in connection with the society there ought to be a reading room and library, containing not only the American and foreign electrical journals, but also the leading magazines, scientific and popular, as well as the daily papers and electrical and other suitable books. He said that he had several books which he had been saving to donate to a society of this kind. Mr. Downer spoke of the efforts made by the late Mr. John Horne and others to establish such a society; he hoped the present movement would prove successful. The promoters, he thought, had everything in the world to encourage and nothing to discourage them.

Mr. W. G. Magowan thought that the members of the society should be largely composed of working operators, and for the benefit of this class and of others whose electrical knowledge was very limited, should begin low and gradually work up to the more complicated departments of electrical science.

Mr. Leslie concurred in this view.

Mr. George B. Scott thought that a library was indispensable—a place where the members and telegraphers generally could spend their leisure time, and study and consult scientific books and periodicals, especially the current newspapers and magazines devoted to electricity, as the latest developments of electricity, he very properly added, are not found in books, but in the journals devoted to the subject. Mr. Scott believed that by attendance on the lectures, and an interchange of views, most of the members would find that they knew more about the subject of electricity than they at first supposed.

Mr. E. C. Cockey, while heartily in favor of the society, did not think that it should be turned into a school. He thought the society would prove beneficial and instructive without going through a regular course of study. After the lecture of the evening the audience should criticize or ask for information on obscure points. In this way the meetings would prove interesting and beneficial by an interchange of views.

Mr. J. N. Ashley being called upon for his views said he was gratified to see so many present. His idea was, first organize an electrical society, and provide a place and time for meeting; then make a start, and the other things, such as a library, reading room, etc., would naturally follow. After speaking of the success of the American Electrical Society, and of the interest he had taken in the reports of the meetings, he said he hoped that a society would be started that night, which would be equally

as successful and its meetings equally as interesting, and promised to do all in his power toward that end in the columns of the *Journal of the Telegraph*. He was sure Mr. Johnston would do the same thing so far as THE OPERATOR was concerned.

The chairman said that he was just about to call upon Mr. Johnston, who had done so much for the fraternity already, and would, he was sure, do anything he could to further such a society as this.

Mr. Johnston said that Mr. H. W. Pope had suggested to him, some months ago, the idea of establishing a telegraph and telephone club in New York. He did not see why the foundation might not be laid for a club of this character, and also for a reading room and library, in connection with the proposed society. He thought the society should open its doors to doctors, amateur electricians and any others interested in the subject who might wish to become members, and that a subscription list for the purpose of securing money enough to put the society, as far as possible, on its feet financially from the outset, would be generously responded to. He was glad to notice the increased demand for electrical knowledge, as evidenced by the large number of letters he is constantly in receipt of, asking what books he would recommend to those wishing to study electricity. He was also pleased to say that the series of scientific articles by Mr. T. D. Lockwood, now running in THE OPERATOR, had met with much success.

Mr. Cushing, being called upon, said that it seemed to him that the sense of the meeting was unanimously in favor of the establishment of an electrical society and, in conjunction with Mr. Ashley, he offered the following resolution:

*Resolved*, That we form an electrical society, and that a committee of seven, of which the chairman of this meeting shall be chairman, be appointed to prepare a constitution and by-laws for the society.

Messrs. F. W. Jones, Geo. E. Baker, Geo. B. Scott, E. A. Leslie, J. W. Moreland, E. C. Cockey, and F. W. Cushing were appointed as such committee.

The secretary read during the evening the following anonymous letter:

"Upon the condition that this society will induce the several local societies of similar character to combine, making one *grand national society*, to meet in New York, a gentleman will give free use of a library, some electrical and telegraph books and papers and a room in the center of the city free for some time for the meetings, and furnish free electrical and telegraph journals."

As this letter was neither dated nor signed the meeting could not, of course, take any action upon it. Mr. Jones, however, referring to the proposition it contained, said that he did not think it at all probable that such a consolidation suggested was possible. The American Electrical Society of Chicago, established several years ago, and numbering among its members many prominent electricians and scientists, would hardly, he thought, care to become subordinate to the New York society. The various local societies, too, would not be likely to consider a consolidation desirable. If, however, the offer were made in good faith, he did not see any reason why the writer, were the matter properly explained to him, should not make the offer to the proposed society itself as it stood, irrespective of any question of consolidation.

The following names were placed on the membership list, and the meeting adjourned to meet at the same place on Wednesday evening, February 23:

F. W. Jones,  
J. K. Knight,  
Theo. Torrey,  
E. C. Cockey,  
F. W. Cushing,  
Chas. E. Davis,  
Geo. B. Scott,  
D. R. Downer,  
J. N. Ashley,  
D. Le Rougetel,  
Joseph L. Edwards,  
A. T. Creelman,  
Geo. E. Baker,  
Edward H. Murphy,  
E. T. Barberie,  
J. W. McLaren,  
J. M. Moffatt,

Jas. W. Phinney,  
Thos. R. Taltavall,  
Minor M. Davis,  
H. L. Storke,  
Richard Smith,  
Geo. F. Stainton,  
W. B. Waycott,  
J. R. Calder,  
W. J. Johnston,  
H. W. Gilbert,  
Wm. G. Magowan,  
M. H. Collins,  
C. A. Stimpson,  
F. Catlin,  
A. S. Downer,  
W. J. Dealy,  
J. W. Moreland,



### The Man I Met on the Train.

I met a man on the train a short time ago. By the way, as Dundreary would remark, "A f-fe-fellow frequently meets other f-fe-fellows on the train, you know."

Well, there was something striking in the appearance of this young man. His hat was set jauntily over his left ear, and the cigar in his mouth was pointing over his right shoulder, in that particular position which necessitates a peculiar knowing squint of the right eye. He stood out on the platform, with his hands in his pockets, apparently regardless of the fact that the train was moving at the reckless speed of 12 miles an hour! There was such an expression of supreme wisdom upon his countenance, and his aspect was so generally intelligent, that I at once concluded he was a telegraph operator. Acting upon this hypothesis I approached him, influenced by the same motive which induces me when in a library to pick up a massive encyclopedia, viz., to procure information, being of an inquisitive temperament. The Impersonation of Knowledge proved to be quite approachable. He was affable, loquacious and condescending, and before long became confidential. He asked my name, and, upon being told that my inherited patronymic was Smith, immediately inquired if I were a relative of Constantius Smith, whom he remembered to have met at a select social reception given to him by the "Segregated Order of Unmitigated Plugs," in the city of Boston, when Billy Kettles, Eitemiller, Hank Cowan, Lin C. Doyle and one or two other noted telegraphers were present. Having, with my customary frankness, assured him that Constantius was a near relative and valued friend of mine, he became more loquacious and confidentially communicative than before.

A telegraph operator? Why, of course. At least, that was one of his numerous professions, although at present he was just a little out of practice, not having worked at the mystic art since he resigned his position in the "Central office" at Paudunk Flats, to accompany Andy Johnson on his swing around the circle several years ago, being a particular friend of the Tennessee tailor, who had promised him a Cabinet position in the event of his (Andrew's) re-election. Andrew got left, however, and our friend was also left—to his own resources. He shipped for a three-years' cruise before the mast; was shipwrecked in the Suez Canal; washed ashore by a bar of soap, which he happened to have in his pocket, was captured by Chinese pirates, married the daughter of the "Hi-Yu-muck-a-muck" of the Buccaneers, became King of the Hoop-la cannibals; deserted his adopted tribe; claimed the protection of the American Consul, who gave him a half-fare railroad ticket to America, where he arrived in safety a short time ago, and is now a candidate for the legislature from Whoopemup County, Arizona! Naturally enough, I was completely overawed when I heard from his own lips that I was in the presence of a genuine nineteenth century hero of the dime-novel school; and, being perfectly satisfied that the untold portion of his history could not be more interesting than the brief chapter outlined above, I modestly returned to the original subject by remarking that I myself had acquired a somewhat brilliant reputation as an operator, hoping thus to be able to draw him out and induce him to expatiate upon a subject which I was capable of comprehending and conversing upon intelligently. The effort was a failure,

however. He made one or two feeble remarks, and then went wandering off toward the Suez Canal, Chinese pirates, Mexican banditti, etc., mixing things up regardless of geographical lines, and really shaking my confidence in the veracity of his narrations by the reckless profusion of his "hair-breadth 'scapes" crowded into a short portion of time.

At last, however, I succeeded in getting him located at 145 Broadway in 1864. Then I incidentally remarked that I also officiated in that particular office at that identical time, whereupon, with the most nonchalant air imaginable, this telegraphic veteran inquired: "Did you—ah—did you send or receive?" I promptly informed him that I received messages with a crow-bar, dispatched them with a hatchet, and delivered them by special police.

Just then the conductor came along for the tickets, and as the train had providentially or otherwise slackened its speed, my acquaintance with 'ye I-know-it-all countenance and interesting history, embraced the opportunity of "silently stealing away," obviously for the purpose of eluding the uniformed minion of a grasping monopoly, who wanted to oppress the passengers by collecting fares; and, as he disappeared, there ran through my mind a nonsensical jingle by Shakespeare, "Pinafore" Gilbert or somebody else, the words of which are about as follows:

"You can't sometimes most always tell  
An electrical 'bilk' from a genuine swell,  
And I've seldom seen—or scarcely ever—  
A fellow as smart as he thought himself  
clever." PACIFICUS.

### Money by Telephone.

"Say, Miss," said a rather hard-looking customer to the young lady in charge of the Central telephone office, one day last week. "Say, Miss, I'd like to talk with Mr. Joseph Snooks a moment."

The lady called Snooks and turned the instrument over to the guest.

"Halloo, halloo! Mr. Snooks!"

Snooks answered, and in the ensuing colloquy the lady could, of course, only hear the hard-looking customer.

"Snooks, old boy, I can't come up for that money to-day; I'm too busy."

"Eh?"

"No, can't get away."

"I know, but I'm sorry; I've got to meet Brace about your affair."

"But I'd jeopardize all our interests. I positively can't come. Can you send the money down?"

"Down here."

"I don't believe she'll do it, will she?"

"No, I don't know her. She's a handsome girl, with blue eyes and light hair. Know her?"

"I'll ask her about it. Wait, keep your ear there [Miss, Mr. Snooks wants to pay me four dollars, and says for you to let me have the money. I'll ask again to make sure]. Snooks, did you mean for this fine young lady to pay me and charge it to you?"

"Don't hear you."

"Yes, yes, all right. [He says, Miss, for you to take my receipt and let me have the cash. You are to put it in his telephone bill]. All right, Snooks, good-by, see you to-morrow," and he hung the mouth-piece on the hook.

"Fine fellow, Snooks," he continued, looking pleasantly at the manageress. "I never heard of sending money by telephone before, did you?"

"No," responded the lady.

"Perhaps you haven't the change handy?"

"Yes," said she.

"You'll trust Snooks, I presume," he went on in a faltering manner.

"Certainly," she replied, "if he says to let you have it."

"You don't think the telephone would lie, do you?"

"Assuredly not. I'll just ask Mr. Snooks."

"No, no. He's a sensitive man; he wouldn't like to have so much fuss over a small amount. Make it two dollars and I will give him a receipt on account."

"I'll pay anything Mr. Snook says. I'll call him."

"Rather than trouble him again, I'll make it a dollar. Give me a dollar—"

"But I prefer to call him."

"Miss," said the man, "don't go near the wire now. There's a cloud coming up. You're going to be struck by lightning. Rather than that I'd take fifty cents—a quarter."

"Oh! I'm not afraid," and she approached the instrument.

"Keep away from that wire!" he howled; "don't call Snooks; he might be struck. If you don't care for yourself, have some mercy on his family. You needn't pay the amount at all. I wouldn't risk Snooks for all the money in town."

"I shall either call Snooks or a policeman," said the girl firmly.

"Make it a policeman and I'll go for him myself," shouted the tramp, as he jumped over the rail.

And then she called Snooks, who had been swearing at his end of the wire in the hope of making some one hear him, and told him it was all right, she hadn't quite paid the money.

### Still in the Law Courts.

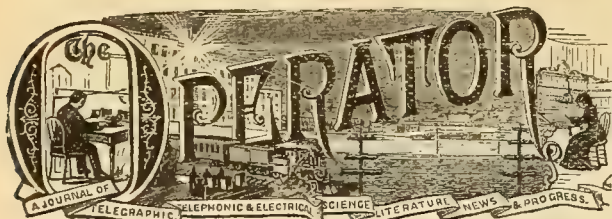
Readers of THE OPERATOR have already been informed that, prior to the consolidation, the Pennsylvania Railroad Company directed the Western Union Telegraph Company to withdraw its agents and operators from all the officers on the lines controlled by the Pennsylvania system, and that the telegraph business would be turned over to the American Union Company, at the same time threatening to throw down the Western Union wires unless they were removed by a certain date. The latter company then appealed to the United States Court at Philadelphia for a temporary injunction to restrain the railroad company from carrying out its threat. The case was argued before Judges McKennan and Butler, and is still held under advisement. Meanwhile, the Pennsylvania Railroad, as a supplement to this suit, filed an application for a counterinjunction to restrain the Western Union Telegraph Company from using the rights and privileges granted by the Pennsylvania Railroad to the American Union Telegraph Company, and on the 8th inst. the Court made the following order:

"It is ordered that the Western Union Telegraph Company be restrained from using the telegraph poles and wires of the American Union Telegraph Company in such a manner as to violate the right of the Pennsylvania Railroad Company, under the agreement of Jan. 17, 1880, with the American Union Telegraph Company."

Last Wednesday, the 9th inst., a conference was held in Philadelphia between the officers of the Pennsylvania Railroad and their counsel and Jay Gould, Gen. Eckert and Mr. D. H. Bates, representing the consolidated companies. It was then decided to suspend all operations in the matter of litigation for the present. This action is intended to hold the present proceedings in abeyance until new terms can be agreed upon.

The Faraday lecture for 1881 will be delivered by Professor Helmholtz in the theatre of the Royal Institution, April 5. The subject will be "The Modern Development of Faraday's Conception of Electricity."





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## NOTICE.

MR. J. R. CALDER, a representative of this paper, expects to leave New York on Monday, Feb. 21, for a trip to Philadelphia, Pittsburgh, Baltimore, Washington and intermediate points, on the business of *THE OPERATOR*, both subscription and advertisement. Any courtesies shown or favors extended to Mr. Calder will be appreciated by the Publisher precisely as if rendered direct.

## GENERAL THOMAS T. ECKERT.

We present to the profession to-day an engraving of the newly appointed General Manager of the Western Union Telegraph Company. We present the picture also to General Eckert as a valentine; the time being appropriate and the surprise complete, for none probably will be more astonished to see it than the General himself.

Nothing that we could say can add to the prestige of the illustrious subject of our sketch. Our feeble commendation may even be a matter of no concern to him; but, in accordance with our rule, when a working operator rises from the ranks to eminence we must, as an incentive to other workers, call attention to his successful career.

At the same time we heartily commend the wisdom of the choice of General Eckert to reorganize and perfect the telegraphic system of the country. He has always been a staunch advocate of reasonably cheap telegraphy; for many years it has been his aim to give to the people a perfect telegraphic service at low rates, and now that the duty of shaping the course of telegraphic events has devolved upon him, we are confident that the excellent ideas which he has so long fostered and advocated will speedily be realized. General Eckert, with his vast experience at home and abroad—as an operator at the key, as superintendent, as chief of construction, as Assistant Secretary of War, and as the guiding spirit of vast corporations—has fairly won the esteem and confidence of those around him, and his appointment is a guaranty to all deserving men of fair treatment and recognition.

Since the Congress of the United States presented its gold medal to the great originator of Atlantic cable telegraphy, and “Honor to Cyrus W. Field” blazed forth in gas-jets in front of our City Hall, no American telegrapher—with the single exception of Professor Morse—has received more distinguished honor than General Eckert; none has better deserved it. Nearly a score of years ago, President Lincoln appropriately styled him the Prince of Telegraphers, and to-day he

stands forth as the foremost practical telegrapher in the world.

As an executive officer, General Eckert is generous and kind to deserving ones, but at the same time he is always a stern and strict disciplinarian. His presence is sufficient to dispel the spirit of fear and distrust which is too frequently found among employes; for General Eckert not only rules, but understands and appreciates the principles that underlie his ruling, and recognizes always how thoroughly the well-being of each worker is involved in the welfare of the whole. In this way that spirit of enterprise which has swept his former undertakings rapidly to success is awakened and sustained in others; since, under the spur of an excellent example, and fired with the common enthusiasm, the humblest worker in the ranks claims kinship with his great chief. The inevitable result is, untiring perseverance in all quarters, loyalty of the workers each to the other, unmelting unanimity in striving for the common good, and Contentment and Success.

Thus, as years roll on—many of them, we hope—and the world goes whirling down the ringing grooves of change, General Eckert may look with satisfaction upon the prosperity among his subordinates which his administration has given them; while the civilization and the stronger bond of amity between nations which his work is now spreading, and to which he has brought such a wealth of thought, experience and energy, will be his monument.

ALTHOUGH we have tried to bring operators to see how short-sighted a policy it is for them to turn their offices into telegraph colleges, this journal has never objected to a freeman making an honest living in any way that may suit him, and the doctrine covers even the professors who are teaching our mystic art for a stated sum. They have as clear a right to make a living by teaching telegraphy as any other monitor has by teaching free-hand drawing, or architecture, or the mysteries of Coke and Blackstone. The country is free, and if there is any man particularly fond of freedom it is your old-time, genuine operator, free as a bird. But we object to deception and sophistry, and when we detect alleged telegraphers in attempts to beguile the uninitiated, we feel bound to oppose them. There, for instance, is N. J. Saviers—or, rather, what is left of him—to whom we accord a free advertisement in this issue. We object to his circular as a double infliction of falsehood and bad grammar upon the suffering public. Read it carefully. “Owing” is a good word for one of these peripatetic professors to commence a screed with, although it is in the natural order of things. The “scarcety” of operators is as nothing beside what the “scarcety” of such shocking orthography is in our profession. “It is proposed to place it in the reach of every one who wishes to avail themselves” is such a master-piece of composition that we do not wonder that “hence terms are made unapproachable,” except for millionaires. All through the circular is found the same enchanting disregard of grammatical conventionalities, and philanthropic invitations to spend your money flow from the writer’s pen like charming music from the throat of the nightingale. But it is in the matter of board where he comes out strong; although “three dollars per week” is enough to make the hair in the butter stand on end. As we said before, we have no objection to any man making a trade of teaching telegraphy, including the abstruse art of taking a “salting” with a

good grace; the proper way to “frite gerse,” the inner mysteries of dots and dashes, and breaks, and reds, and blacks, and quads, and duplexes, 27, 18, 134 and all the business, in the short period of two months—if he could do so; we desire to interfere with no man’s educational labors, but what we do object to is this: We object, among other things, to the following statements, which are as false as the ingenuity and shamelessness of a swindler could make them: “Two months will qualify anyone with ordinary intelligence to take a position.” “We can guarantee a situation in every instance.” “We want fifty operators on May 1 for one company.”

Saviors? Saviers! Can this be the well but not favorably known N. J. Saviers against whom the Western Union Company has a suit at law? For his silent partner in the business, who uses the Atlantic and Pacific Company’s wires in connection with the “College,” we have an appropriate motto, which we hope he will paste in his hat: “A rolling Stone gathers no Morse.”

ON the 11th of June, 1873, John George Boyce was admitted to the Telegraphers’ Mutual Benefit Association. He allowed his membership to lapse, through poverty, December, 1873; was fully reinstated October, 1876, and died at Lake City, Florida, Nov. 15, 1877. It was reported to our executive committee that he died of consumption, although the attendant physician swears he died of some other disease, having been confined to his bed only five days. His claim was rejected by a majority of one, out of nine votes. The obligation put by our exacting rules upon those faithful and tried officers left them, in the light of the grossly perverted testimony placed before them, no alternative but to reject the claim, as the mitigating circumstances could not weigh with them, considering their prime duty to us. The reluctance with which they were forced to this decision is best illustrated by the prompt and generous manner in which, after voting down the claim on our Association, they recognized the equity in the case, and gave double, thrice and even ten times the amount called for by a regular assessment.

In this connection, Mr. Watson, the able Secretary of the Association, wrote: “It is certainly by far the hardest and most pitiful case we have ever known, and as far as my personal feelings go I should much have preferred to recommend payment.” Mr. J. M. Crowley, of Augusta (the district where Boyce died), wrote: “I am sorry to hear that this claim has not been settled. It is my opinion that the Association is bound for it, and hope it will yet settle it.” Mr. Heber C. Robinson, the agent who readmitted Mr. Boyce, solemnly avers that the candidate was in as good health at the time of his reinstatement as when, through his inability to pay, he allowed his first policy to lapse.

THE OPERATOR believes that, in case of a grave doubt, our executive committee, about whose integrity there can be no question, should have discretionary power to accord the benefit of that doubt to the deceased. We believe that when once a certificate of membership has been issued to an operator, and he has paid his assessments regularly for one year, his claim should be indisputable, unless vitiated by his own conduct subsequently to his admission. Moreover, we believe that the payment of this claim is a debt of honor which the members of the T. M. B. A. can not with justice ignore; and, therefore, we hope that it will be speedily paid.

If remittances are made to this office, we will promptly turn over the amount to Mr. James N.



Ashley, Secretary, and acknowledge receipt in these columns.

IN the light of several recent fast-sending tests, and much discussion upon the subject, it may be well to cull from the records a few well authenticated instances of rapid telegraphy, and which we believe to be the fastest on record: About New Year's, 1868, "Circular No. 4," issued by the Western Union Company, instructed certain local officials to try the speed of the ordinary Morse instrument, and several trials were made, East and West, under this order. On the 21st of January, 1868, Messrs. D. F. Marks and Charles Bagley, of the New York Western Union office, sent to Nicholas J. Snyder, at Philadelphia, 2,514 words of press in one hour. On the 20th of February, 1868, Mr. Edward Stewart, of Washington, D. C., sent to Mr. Nicholas J. Snyder, at Philadelphia, 2,540 words of press in one hour. This was the first half of a speech delivered by M. Thiers, in the French Assembly, and was sent from the columns of the *Tribune*. This record is sworn to by Mr. James Merrihew, at that time Western Union Manager at Philadelphia. On the 8th of February, 1863, Mr. E. M. Sharpe, of Cleveland, Ohio, sent to Mr. E. Curry, of St. Paul, Minn., over one continuous circuit, a distance of 450 miles, 2,631 words in one hour. This was also sworn to, and was the fastest of the official tests. On the 8th of May, 1868, between 9 and 10 o'clock P. M., Mr. P. H. Burns, of Boston, sent to Mr. Walter P. Phillips, at Providence, R. I., 2,731 words in one hour. This was a selection from the sixth chapter of Dean Swift's "Gulliver's Travels." Messrs. Snyder and Phillips received personal recognition from Professor Morse. For a half-hour test, Mr. R. I. Hutchinson, at New York, on the 19th of February, 1863, sent to Mr. Nicholas S. Snyder, of Philadelphia, 1,352 words of press (cut at random from a paper of that date) in thirty minutes. This was at the rate of 2,704 words an hour, and was also an official test. In off-hand working, 220 messages, averaging 10 words each, were exchanged over the Parker, Pennsylvania, duplex, between Parker and Oil City, in one hour, December, 1879. Fast work of a later date scarcely needs to be repeated; and, in any case, the official tests, accompanied by the sworn statements of the respective managers, can be the only reliable standards. It may be well to state that in these tests the sending must be received and copied in a legible hand by a receiving operator.

MESSRS. J. H. BUNNELL & Co. believe that the best way to demonstrate the value of their steel lever keys is to publish the opinions of them expressed by those who have used them. In today's issue will be found a full page advertisement devoted to this subject, giving strong indorsements of the keys, not only by some of the best known operators in the country, but also by several superintendents, managers and others who have practically tested the new key, and all of whom unite in recommending it to others. The firm of J. H. Bunnell & Co. stands in somewhat the same relation to telegraph manufacturers that the American Union did to telegraph companies. Although only in business for a comparatively brief period its progress has been remarkable, but no more so than the high quality and reasonable prices of the goods manufactured by the firm entitle it to.

TO-DAY is the anniversary of the birth of that sprightly telegraphic paper, *The Magnet*. Its untimely ending would, if space permitted to-day,

lead us to inquire what becomes of all the shipwrecked telegraphic journals: and, since talent has never been scarce, why the thousands of dollars invested—foolishly, it would seem—cannot keep them afloat for even as long a period as one year. But, perhaps, it is as well not to inquire too closely, and to leave the everlasting mystery for future venturesome scribblers to discover by experience, which is, after all, the best teacher. *The Magnet*, with such names as Christie, Phillips, Lucy Dana, U. S. Consul Catlin and ex-Governor Bullock to sustain it, was a journal of infinite jest. "Alas, poor Yorick," etc.

SOME of the merchants, brokers and capitalists generally who are displaying so much childish confidence in the great number of projected new companies, on condition that in the course of time they shall not consolidate with the older companies, would do well to demand real estate security for the fulfillment of those promises. Some such condition has been exacted from the Mutual Union Company in Philadelphia, where, as one of the conditions of obtaining the privilege of erecting poles and stringing wires through that city, they have been compelled to file a bond for \$20,000, which is to be forfeited in the event of a possible consolidation.

WE have frequently wondered why the pathway of the student in the wide field of electrical science cannot be kept clearer of the stumbling blocks of arbitrary signs and monstrosities of expression. Algebra is, of course, a necessity, but there can be nothing gained by loading down the student with E. M. F.'s and such pedantry. Mr. Lockwood appears to have appreciated this drawback to study, and, in confining his technicalities to reasonable bounds, he is insuring for his work a wider circle of readers than is usually found by writers on electrical subjects.

THE frequent announcements of new combinations and startling changes come before us like milestones in our professional path, recording our onward flight, marking the end of one stage and the opening of another. The consummation of the consolidation scheme reminds us that another milestone has been passed; new scenes and fresher and wider fields are spreading themselves before our eyes, and there is nothing for it but to settle down once more to the steady trot necessary to keep pace with the rapid march of events.

THE great want in telephonic apparatus of an individual call-bell, by which the party desired is called and no one else disturbed, is supplied by the inventive genius of Mr. George H. Bliss. The arrangement is quickly attached to or removed from a wire without change in the present line arrangements, and is being supplied by the Telephonic Signal Corporation. Mr. George H. Bliss, of Pittsfield, Mass., is president of the corporation, and Mr. Fred. S. Potter, of New Bedford, Mass., secretary.

THAT is a patriotic, even if a phantom, telegraph company—the United States Postal Telegraph Company—which, hailing from Iowa, coolly proposes to build and operate a system of telegraphs, providing the government gives it office room, rent free, in all the post-offices; the right of way everywhere, over public and private lands, and supplies all the money for construction. Well, as these Iowa men would doubtless phrase it, "we should gently relax the rigidity of our countenance."

WHILE they are nailing up the coffin of that wonderful organization, the American Union, the recollection of its superb administration, and its rapid development in eleven months, raises the usual post-mortem thought of "what might have been." The friends of the deceased company must, however, find some satisfaction in beholding Col. John Lenhart smiling through his tears; and, in laying down his votive offering, swelling the sorrowing and reverent enthanasia.

THE unreasonable craze for jumping out of the frying-pan into the fire, by giving dictatorial powers to the government in matters telegraphic, seems to have come to an end, and the Postal Telegraph scheme has been once more put away to rest. Such an ending of a mad stampede must be hailed with satisfaction by all true friends of a free and independent people. Let the people right their own wrongs.

THE resignation of Gen. Anson Stager from the vice-presidency of the Western Union Company, after a service of thirty years, is a matter of regret to all. Gen. Stager's steady advancement, step by step, until he reached the second highest position in the service, bears testimony to his energy and ability. He will still remain with the company as a director.

MR. H. C. TOWNSEND, late principal examiner in the U. S. Patent Office, in charge of the class of "Electricity," has taken an office as counsellor in patent cases at 237 Broadway, this city. Mr. Townsend was for eight years connected with the electrical division of the Patent Office, nearly four of which he served as principal examiner.

THE letter of our esteemed Chicago correspondent touches, with characteristic skill, on a subject which closely concerns us all—the relations between managers and subordinates. His timely argument speaks for itself, and merits the attention of those who have at heart the advancement of the profession at large.

THE unusual demand for copies of last issue exhausted our supply before all of our new subscribers had been supplied with copies. We would thank those having copies of Feb. 1 on hand which they do not want to mail them to us.

AWAY from the clamor and excitement of consolidations and legal squabbles, Mr. Cyrus W. Field is to-day enjoying his well-earned holiday in India. He is to spend Washington's Birthday in Calcutta.

AGAIN the pressure of current news has crowded out much valuable and interesting matter, for which we owe an explanation to our esteemed correspondents.

OWING to the continued crowded state of our columns, and a commendable desire to "clean up" some of the matter on hand, we to-day present our readers with a twenty-four-page paper.

WESTERN UNION stock is quoted at 111½, American Union at 79½ and A. & P. at 46½. Last issue they were 118, 84½ and 47 respectively.

WE are under obligations for an invitation to the Chicago telegraphers' ball, Feb. 24, and only regret our inability to be present.



# Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

BY T. D. LOCKWOOD.

Q. 88. Describe the simplest and best methods of measuring the internal resistance of a battery.

A. There are various methods of determining the internal resistance of a battery. We give three ways which are as simple as any. The first, often called Mance's method, from its discoverer, is to place the battery to be measured in the fourth branch of a Wheatstone bridge. Let the first two branches be fixed resistances, and the third a rheostat or adjustable resistance. The galvanometer is kept in the usual place on the cross wire, but in the usual place of the battery we substitute a key, which permits us to connect or disconnect the wires, thereby enabling us to close or open the circuit at the point where the battery is generally placed. The adjustable resistance is then varied until the making and breaking of contact by the key does not alter the deflection of the needle. Then, as the resistance in branch 1 of the bridge is to branch 2, so is the resistance unplugged from the rheostat in branch 3 to the internal resistance of the battery in branch 4. Or, if the two branches at the first end are made equal, the resistance of the battery is also equal to that of the rheostat.

To illustrate: We will call the four branches of the bridge A, B, C and D, and have a resistance of 10 ohms in each of the branches A and B. We place the battery to be measured in D, and the rheostat in C. We then close the key and the needle deflects; but, on raising the key the deflection alters materially. We unplug, say, 50 ohms from the rheostat, and find then that the deflection remains the same, whether we depress or raise the key. Then, as A and B are equal, both being 10 ohms, D must also be equal to C; that is, 50 ohms. This method is practically independent of the galvanometer resistance, and is extremely accurate, because it is not affected by variations in the strength of the battery.

In the second method, here given, the tangent or sine galvanometer may be used. Connect a rheostat, a tangent galvanometer and the battery to be measured in circuit together. Vary the resistance in the rheostat till the needle shows a deflection, for example, of 45 degrees. Then, referring to the table of tangents, we find that the tangent of 45 degrees is 1. Note the resistance unplugged and find what half of the tangent of the deflection is. In this case, as the tangent is 1, its half will be, of course, one-half, or in decimals .5. Referring again to the table, we see that the degree of which .5 is the tangent is 27. Then unplug resistance until the deflection is reduced to 27. Again note the resistance unplugged. Then, to ascertain the battery resistance, double the smaller resistance noted and add to the result the resistance of the galvanometer, and subtract the total from the larger resistance. The difference is the resistance of the battery. For example: We use a galvanometer of 100 ohms resistance, and unplug for the first deflection 80 ohms. To halve the tangent of the first deflection, we have to unplug 400 ohms. We then double the smaller resistance, the result being 160 ohms, to which we add the resistance of the galvanometer, 100 ohms, making in all 260. Then we subtract 260 from the larger resistance unplugged, 400 ohms, and find that the difference is 140, which is the resistance of the battery.

The third method is also simple, and may also be worked out with a sine or tangent galvanometer. Place the battery in circuit with a sine or tangent galvanometer and a rheostat, and note the deflection. Insert resistance till the sine, or tangent, of the deflection becomes half of that of the original deflection. The total resistance is now doubled. Then deduct the resistance of the galvanometer wire and connections from the resistance added, and the remainder will be the resistance of the battery.

Q. 89. How shall we ascertain the resistance of a galvanometer?

A. If we have more than one galvanometer at hand, the obvious way of ascertaining

the resistance of either is, of course, to regard them as any other ordinary resistance to be measured, using one of them as an instrument with which to measure the other. But circumstances sometimes occur which render it desirable that we should know the resistance of the galvanometer which we are using when we have no other to use as a measuring instrument. There are several ways whereby this may be accomplished. The two simplest are here given: First, using the Wheatstone bridge. The galvanometer is placed in one of the branches of the bridge—branch 4, for instance—instead of being left in the cross wire as usual; and in the regular place of the galvanometer a circuit-closing key is placed, so that we may connect or disconnect the two points which would ordinarily be connected to the galvanometer. The battery is retained in its regular position; and, of course, the current flowing from it passes through the branches of the bridge, and causes the galvanometer needle to deflect. The coils in the other branches are then adjusted until the deflection remains unaltered, whether the key in the cross wire is depressed or not. When this is the case, a balance has evidently been effected, and consequently, we get the resistance of the galvanometer by the usual proportion; thus, as branch 1 is to branch 2, so is the resistance of branch 3 to the resistance of the galvanometer in branch 4. To illustrate: If we have 100 ohms unplugged in branches 1 and 2, and to effect a balance we have to unplug 250 ohms, the first two branches being equal, the galvanometer in branch 4 is also equal to the amount unplugged in branch 3; that is, 250 ohms. That this method may be clearly understood, we must go back for an instant to the principle of the bridge. We will see that if a balance is not established, and a current is flowing in the coils of the galvanometer, which will be in its usual place on the cross wire, the current will be denoted by the deflection of the needle; and, as a matter of course, any change in the resistance of the galvanometer, or of any part of the cross wire, will affect the strength of current in all of the four branches of the bridge. If, on the contrary, a balance is established, and the fact is indicated by the needle remaining undeflected, we may alter the resistance of the galvanometer, or even take it away altogether, without in any way affecting the current in the branches.

So, in measuring the resistance of the galvanometer by this method, when equilibrium is once attained, it matters not whether the key in the cross wire is open or closed; the deflection remains stationary.

The second method may be adopted, when the bridge cannot be used, and is as follows: Put the galvanometer in circuit with a resistance box and a battery, whose internal resistance is so small that it may be neglected; unplug any resistance, say 400 ohms, and note the deflection. We will assume it to be 20 degrees. Then put plugs back, withdrawing resistance from the circuit until the former deflection is doubled, so as to reach 40 degrees; there being then 300 ohms unplugged. Then multiply the two resistances by the respective deflections, subtract the smaller product from the larger and divide the result by the difference between the two deflections; thus, 400 ohms multiplied by 20 is 8,000; and 300 multiplied by its deflection, 40, is 12,000. Then 12,000 minus 8,000 leaves 4,000. That amount divided by 20, which is the difference between the deflections 20 and 40 degrees, gives us, as the resistance of the galvanometer, 200 ohms.

Q. 90. How may the electromotive force of batteries be measured, compared or estimated?

A. The electromotive force of a voltaic battery may be determined by several methods, but as no absolute standard of electromotive force is known, we cannot determine the force of any particular battery in standard units (volts), but can only compare the relative force of two or more batteries. We will consider several of the most simple and reliable methods:

1st. If we join up a number of cells in circuit with a number of other cells and a galvanometer, by adjusting the number of cells so that no current passes, and that consequently the needle has deflection, the relative force of the two batteries may be determined.

For example: We desire to know the electro-

motive force of a chromic acid battery of 10 cells, and we have a Daniell battery with which we can compare it. We know that a Daniell cell in good order is about 1.079 volts. We connect one pole—the zinc, for instance of—our chromic acid battery, to one terminal of the galvanometer, and the carbon pole to the copper pole of a battery composed of an equal number of Daniell cells; the zinc pole of the Daniell battery is connected to the other terminal of the galvanometer. We then find that the chromic acid battery causes the needle to deflect. We add cells to the Daniell battery until the needle deflects no longer. We find that we have added 10 cells. Thus it has taken 20 Daniell cells to balance 10 of the chromic acid cells; showing that the chromic acid battery has just twice the electromotive force of the Daniell, or in the ratio of 2 to 1.

To ascertain the value in volts, multiply the electromotive force of the Daniell cell, 1.079, by the number of cells, 20, and divide by the number of acid cells, 10. The quotient is 2.158, which is the value of the chromic acid cell; or, in other words, as the larger number of cells is to the smaller number, so is the electromotive force of the larger number in volts, inversely, to that of the smaller number.

The second method, using a tangent galvanometer, is as follows: The electromotive forces of two batteries, which we will call No. 1 and No. 2, are to be compared. No. 1 is joined up in circuit with a galvanometer and a resistance box. Sufficient resistance is unplugged to cause a convenient deflection of the needle. The tangent of the deflection must be noted, as must also the total resistance in circuit; that is, the resistances of the battery, galvanometer and that unplugged from the box.

Then remove battery No. 1 and substitute No. 2. If the internal resistance of No. 2 is different from No. 1, the resistance unplugged must be adjusted, until the total resistance in circuit is the same as before. Again note the tangent of the deflection. Then the electromotive force of No. 1 is to the electromotive force of No. 2 as the first tangent noted is to the second.

For example: Let No. 1 battery have a resistance of 60 ohms and the galvanometer 100 ohms. We unplug 800 ohms in the resistance box, making a total resistance of 960 ohms. With this resistance, we will suppose the needle deflects to 35 degrees. Referring to the table of tangents, we find that the tangent of 35 is .70.

We note the above facts and disconnect battery No. 1, substituting in its place No. 2, which has a resistance of 100 ohms. We alter the resistance coil to 760 ohms, to make the total resistance the same as before, *i. e.*, 960 ohms. We find the deflection now to be 42 degrees, the tangent of which is .90.

Then as .70 is to .90 so is *e. m. f.* of No. 1 to the *e. m. f.* of No. 2. In these measurements it is supposed that we know the *e. m. f.* of one of the batteries, which is called the standard battery; so, to reduce the calculations to figures, we will call No. 1 the standard, and assume it to have a value of 20 volts; and as .70 is to 20 volts so is .90 to 25½ volts.

The third method is that of Wheatstone, which is by many electricians regarded as the most elegant method in use. It consists in placing each battery alternately in circuit, varying resistance to produce the same deflection with each, then adding the required resistance in both cases, to produce lower but, again, similar deflections; the *e. m. f.*s then being directly proportional to the added resistances, which in both cases were required.

To illustrate: No. 1 battery, which we will suppose has a known *e. m. f.* of 25 volts, is placed in circuit with a galvanometer and a resistance box. We unplug say 2,000 ohms, and note the deflection to be 30 degrees. Adding 200 ohms to that already unplugged, brings the deflection down to 24 degrees. Taking out battery No. 1 and inserting battery No. 2, we find that to produce the same deflection—30 degrees, as at first produced with No. 1—we have to unplug but 1,800 ohms; and by adding 150 ohms, we bring the deflection down to that produced by adding, when No. 1 was in circuit, 24 degrees. Now, the amount added in the measurement of No. 1, that is, 200 ohms, is to the amount added in the measurement of No. 2, *viz.*, 150 ohms, as the *e. m. f.* of No. 1, 25 volts, is to 18¾ volts, the *e. m. f.* of No. 2.

Q. 91 What is a shunt?



A. A shunt may be defined as a contrivance for leading by another route part of a current which, as a whole, is too powerful for the immediate purpose. In the present connection, it is a coil of wire used to divert some definite proportion of a current aside from or past a galvanometer or other instrument, instead of allowing it to pass through the instrument coils.

For instance, if the galvanometer has its two terminals connected by a wire which includes a resistance equal to one ninety-ninth of the resistance of the galvanometer, we reduce the galvanometer to one-hundredth of its original sensibility, ninety-nine-hundredths of the current passing through the shunt, and the remaining hundredth through the galvanometer. Similarly, if the shunt be exactly equal to the galvanometer, the current will divide in equal proportions between the galvanometer and the shunt. If the shunt is one-half the resistance of the galvanometer, two-thirds of the current will pass through the shunt, and one-third through the galvanometer, and so on. The rule is that the current divides between the galvanometer and the shunt in inverse proportion to their respective resistances, the greater portion of the current always going through the smaller resistance, and the smaller portion through the greater resistance.

When very strong currents are being used in measurements, it is necessary that a shunt be employed, in order that the needle's deflections may be reduced to a reasonable limit.

Galvanometers are usually provided with three shunts, which are respectively one-ninth, one ninety-ninth, and one nine-hundred-and-ninety-ninth. These reduce the current passing through the galvanometer, respectively, to its one-tenth, one hundredth, or one-thousandth part.

Q. 92. What is the formula for finding what resistance a shunt should be to reduce the sensibility of a galvanometer to any required fractional part, and what is meant by the multiplying power of a shunt?

A. The formula for finding what the resistance of a shunt should be, to give it a definite value, is to make the resistance of the shunt equal to the resistance of the galvanometer, divided by the multiplying power required, minus one.

For example: Suppose we have a galvanometer whose resistance is 100 ohms, and we wish to prepare a shunt which will reduce the sensitiveness to one-tenth. We divide the galvanometer resistance by the fractional part to which we wish to reduce the sensibility, minus one; that is, we divide the 100 by 10, minus 1, which is, of course, 9. The quotient of 100 ohms divided by 9 is 11 ohms and one-ninth, which is the resistance of the shunt required, and is one-ninth of the resistance of the galvanometer. This is called a shunt having a multiplying power of 10. To obtain the true value of a deflection taken, for instance, from a shunted tangent galvanometer, we must multiply the tangent by the multiplying power of the shunt used. To ascertain the multiplying power of any shunt whose resistance is known, we divide the resistance of the galvanometer by the resistance of the shunt, and add one to the quotient.

For example: We are using a galvanometer with a resistance of 100 ohms, and insert a shunt whose resistance we know to be 25 ohms. To find out by what number we have to multiply the shunted result, we divide the 100 by 25, which gives us a quotient of 4, to which must be added 1, showing that 5 is the multiplying power required.

Q. 93. If we employ a shunt of a given proportion, is the current which then passes through the galvanometer strictly the proportionate part of the original current to which it is apparently reduced?

A. No, because by the act of employing the shunt we furnish a double route for the current, and thereby diminish the external resistance of the circuit, and as a consequence the strength of current furnished by the battery is increased.

It is, therefore, the increased current that splits between the shunt and the galvanometer, instead of the original one.

For example: If we are using a tangent galvanometer, and the tangent of deflection without the shunt is .80, we would naturally have supposed that on the introduction of a shunt which reduces the sensitiveness of the galvanometer one half, the tangent would also be brought down one half; that is, to .40. But such is not the

case, the result being some higher tangent than .40; and to bring about an accurate result, we must first find the joint resistance of the shunt and galvanometer, by the rules previously given for the calculation of joint resistance, and then insert an additional resistance in the battery circuit equal to the amount by which the original resistance was decreased. Thus, if both the galvanometer and the shunt are 100 ohms resistance, the joint resistance of the two is 50 ohms. In this case, therefore, we should have to insert 50 ohms in the battery circuit to compensate for the decrease in resistance, and to bring the current back to its original strength.

### The "Prism" Leclanche Battery.

Apropos of the new advertisement of the Leclanché Battery Company in the present issue,

Fig. 1

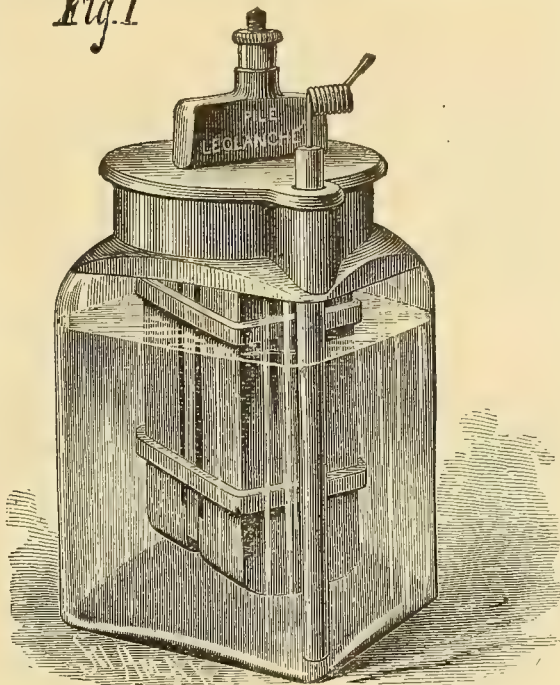
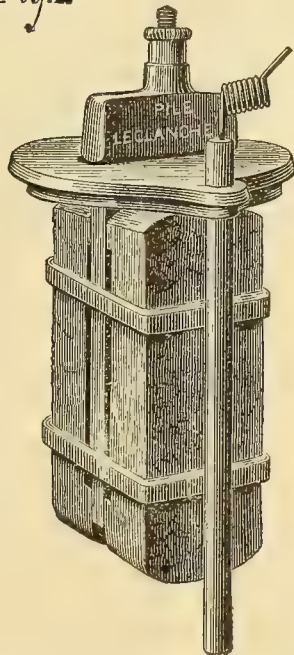


Fig. 2



readers of THE OPERATOR will be interested in the following description of the improved form of Leclanché battery, which we copy from the *Scientific American*.

The Leclanche battery is now more generally used for open circuit lines than any other, and its peculiar adaptability to the telephone service has given it an immense field of application. In the battery shown in the annexed engraving the porous cup used in the ordinary Leclanche element is dispensed with, and a pair of compressed prisms containing all the materials formerly used in the porous cup are substituted for it. These prisms are placed upon opposite sides of the carbon plate, and are kept in place by rubber bands.

The negative pole consists of a pencil of amal-

gamated zinc, and the two poles are suspended from the cover in a solution of sal ammoniac and water.

The zinc being indefinitely preserved in the sal ammoniac solution, and the peroxide of manganese being insoluble in the solution, no action can take place when the battery is not in use.

After thorough tests by various telephone companies, this battery has been universally acknowledged to be better than any other for telephone purposes, as all of its parts are visible, and any derangement may be at once discovered. The battery is readily taken apart, cleaned, and set up again. To do this requires no special knowledge of electrical apparatus. When the elements become exhausted from long service, they may be renewed by taking off the prisms, soaking the carbon below the head in hot water, attaching new prisms, and setting it up with a new zinc and a fresh sal ammoniac solution.

Further information will be furnished by the Leclanche Battery Company, 40 West Eighteenth Street, New York.

### The Boyce Fund.

In answer to the call for the voluntary payment of the insurance due on the life of Mr. John G. Boyce, the following subscriptions have been received, and the amount turned over to the parties in immediate charge of the fund:

#### FROM PHILADELPHIA.

Cash.....	\$5.00	A. H. Lang.....	1.00
H. C. Robinson.....	3.00	H. A. Smith.....	.50
W. J. Dealy, N. Y..	1.00	J. T. Wilde.....	1.00
"Found," per W. J. D.	1.00	E. L. Maize.....	1.00
William Carley.....	1.00	G. D. Maull.....	1.00
J. Newton Marshall		J. T. Anderson.....	1.00
(Bryn Mawr).....	1.00	G. B. Pennock.....	1.00
J. A. Conover, Jr..	1.00	W. F. Jones.....	1.00
Joseph Christie.....	1.00	J. A. Henneberry..	1.00
J. N. Kates, Wil-		W. F. Helms, Jr....	.50
mington.....	.50	J. S. Eves.....	.50
S. B. Jervis, Wil-		E. C. Boileau.....	1.00
mington.....	1.00	C. L. Laverty.....	1.00
E. P. Porter.....	.50	W. N. Gove.....	1.00
W. D. Sargent.....	1.00	J. E. Zeublin.....	5.00
S. S. Garwood.....	1.00	W. G. Jones.....	2.00
D. V. Stonacher....	1.00	G. F. Jones.....	1.00
S. H. Jones.....	1.00	E. S. Risdon.....	1.00
E. H. Smith, New-		T. W. Bair.....	1.00
town.....	.50	T. H. Maholland....	1.00
Chas. Jamieson ....	1.00	J. H. Steinmets....	1.00
H. A. Wells.....	1.00	W. H. Dillon.....	1.00
W. L. Malen, Belle-		W. D. Black.....	1.00
fonte.....	1.00	P. B. Tingley.....	1.00
B. F. Gilmore, Cham-		Thos. Tibbets.....	1.00
bersburg.....	1.00	H. G. Whallon.....	1.00
F. H. Duncan, Tren-		G. A. Connor.....	1.00
ton.....	1.00	H. C. Plattenburg..	.50
Geo. S. Ware, Cape		Kelley.....	.50
May.....	1.00	J. S. W. Phillips....	1.00
Kennedy Duff.....	1.00	R. J. Mawhinney...	.50
D. F. Crean.....	.50	J. M. Sailer.....	1.00
H. Schotte.....	.50	J. C. Galusba.....	1.00
D. Mahoney.....	1.00	John D. Clarke ....	1.00
Samuel Black.....	.50	J. A. Hartman.....	1.00
D. J. McLoraine ....	.50	Herman Schussler..	1.00
R. W. Haworth.....	.50	I. V. Jones.....	1.00
J. Y. Borden.....	1.00	C. E. Stump.....	1.00
James Partrick.....	1.00	A. G. Wallace.....	1.00
W. H. C. Hargrave..	1.00	Cyrus Moffet.....	1.50
R. L. Boyer.....	1.00	B. F. Lloyd.....	1.00
F. A. Pressell.....	1.00	I. D. Maize.....	1.00
W. A. Connor.....	1.00	John Wintrap.....	1.00

The following amounts were collected and duly handed to Mrs. Boyce nearly two years ago:

A. H. Watson.....	\$10.00	J. P. Kirschner....	1.00
F. A. Armstrong....	3.00	G. L. Lang.....	1.00
R. H. Rochester...	2.00	H. A. Clute.....	1.00
J. F. Morrison.....	2.00	H. L. Waterbury..	1.00
R. O'Brien.....	2.00	J. H. Rugg.....	1.00
A. S. Brown.....	1.00	C. C. King.....	1.00
W. J. Dealy.....	1.00	H. E. Doolittle....	1.00
W. J. Johnston.....	1.00	C. C. Whitney....	1.00
J. W. Tillinghast..	1.00	J. Mitchell.....	1.00
J. W. Hucker.....	1.00	J. T. Nelson.....	1.00
E. F. Leighton.....	1.00	E. L. Laycraft....	1.00
J. F. Story.....	1.00	T. P. Scully.....	1.00
J. W. Kate.....	1.00	C. H. Vogal.....	1.00
P. P. Hauff.....	1.00		

The following amounts, on the same account, were remitted to Mrs. Boyce, last Christmas:

W. J. Johnston, New York.....	\$2.00
A. J. Darlington, Reading, Pa.....	1.00

The individual subscriptions for \$17.50 have already been acknowledged in these columns.

Making a total of.....\$144  
List not yet completed.



## How the Operators View the Consolidation.

To the Editor of The Operator:

SIR: When we compare the advance of the telegraph proprietors—and many of the present magnates were among the pioneers in the business—and observe their great opulence, it seems to me that they ought not to forget the operators who helped them to lay the foundations of their present great wealth, nor reduce their salaries, thus reducing them to serfdom; but, where they are reliable and competent, remember the services of the past and give them a chance to live.

J. L.

BOSTON, Jan. 19, 1881.

To the Editor of The Operator:

SIR: Is it not better to bear the ills we have than fly to others that we know not of?

This was the thought of many a telegrapher, a year ago, when the American Union was talked of, and especially those who had had experience with opposition companies. But it promised so much that men who had vowed they would stay by the "great monopoly" were won over to the side of opposition. Only a single year has passed, and now we are called upon to witness another consolidation. During the past year salaries have been steadily increasing, for which we must thank the opposition company. Many of us are but just beginning to feel the benefits arising from an increase of pay when comes the death knell to all our hopes. Past experience would certainly warrant the belief that we are again approaching starvation salaries. These thoughts may be premature. Let us, at least, hope so. Time alone can tell.

X.

ST. LOUIS, January 25, 1880.

To the Editor of The Operator:

SIR: They have consolidated! Confound the word *consolidate*. Swearing! Whoopee! How the boys are swearing all over this bright land of flowers, early vegetables and other disorders, and yet our little talking must be of a very mild order, compared with the remarks of our Northern and Western brethren.

Oh! it got here (the American Union, I mean). Yes, it did manage to reach us, but our climate didn't seem to suit its constitution, and just as the boys were waking up from their long sleep, rubbing their eyes and catching a slight glimpse in the near future (very near we thought) of old time salaries, and some of the ancient appreciation on the part of our bosses of our services, why presto! change, the bottom drops out, consolidation is announced and the dev—the monopoly has got us again.

Did you ever hear of Buck Boyd? Guess you never did, for that's the fictitious name I am going to hide a friend of mine behind, while I tell you a sad tale of "bursting" ambition and disappointed hopes, which concerns in some measure the aforesaid friend.

Well, Buck had been working for 10! these many months, and even years, for the Western Union. He was a victim of "sliding scales" and "jumping scales," "general reductions" and "special Southern reductions" until his salary barely afforded him a living, but, good fellow, plodded along and managed to exist on promises until patience ceased to be a virtue, if it ever was, and then, like many others of his oppressed brethren, he accepted a good salary and a handsome new office from the American Union right in town, where he had so long been serving the Western Union. All this came to my knowledge while I was hunting alligators in Florida, through a correspondence with the superintendent of the district. The first telegram reads as follows: "Want you to go to Slobtown and take charge at once. Can you oblige me? Answer."

That was the most civil telegram I had ever had from a district superintendent, and I knew something was in the wind. So before replying I stepped into the telegraph office and asked all the boys within reach if they knew why Buck had quit Slobtown. I was at last informed that he was going to manage the Slobtown A. U. office at a big salary. Then there came over me that spirit of independence which imbued our forefathers when they drowned some nice tea for a certain royal gentleman across the waters, and I quietly wiled the superintendent that Slobtown salary (which I knew well) was too small, and I was doing better (though, in truth, I was doing nothing but longing for that very job). Soon, very soon, came the reply, about thus: "Boyd

has gone to the opposition. Must have you at Slobtown to fight them. Will make salary all right." I came at once, the salary was made O. K., and I began a vigorous fight against Buck and the sprightly opposition. I fought Buck, I fought his handsomely uniformed messengers, I fought his call boxes, I fought his D. H. press reports, I fought his low rates. Oh! I fought him well (too well) for three whole weeks, and then—yes, then, even before I once had the ecstatic pleasure of drawing from the W. U. Co. salary commensurate with my distinguished services, the things went and got married, and now neither Buck nor I can tell where we are. Has the W. U. gobbled up the A. U., or has the A. U. swallowed up the W. U.? Did Gould beat Vanderbilt or vice versa? We don't know, but little does it matter with us. Those salaries are coming down and that is what is the matter with Buck and I.

Poor Buck! I am sorry for him, because he expected promotion. It had been promised him by the A. U., and Buck is an ambitious kind of a fellow. He came over to see me last night, and, among other things, he said he felt like getting drunk for the first time in ten years, and, added he: "Rat, old fellow, when I get real mellow I want to smoke a genuine ten cent cigar. Then I can watch the smoke as it curls gracefully upward and learn the route my hopes have gone."

As I before remarked, poor Buck!

DIXIE LAND, Feb. 1881.

RATTLE TRAP.

## Don't "Go West."

A correspondent on the U. P. Railway writes as follows with regard to the relative merits of the East and West in the matter of telegraphic employment:

"The disposition with most of the telegraphers in the Eastern States has been to go to the West, where salaries are supposed to be better and money growing on trees. With eagerness and high anticipations, many have found their way to this land of milk and honey, and have, to their heart's content, tasted the sweets of the Far West. It is a fact beyond doubt, that the entire Western country is flooded with idle operators, all having flocked West with a mistaken idea; and, while throughout the East there is a general demand for operators, here there is but little demand, with hundreds of men ready to fill the vacancies. Many are opening their eyes to the fact that the chances are comparatively better in the East for good operators. In point of salaries there is nothing gained by going West, as living is much more expensive and the change does not justify any one to come West. There are a great many who are daily leaving the West and going back East, and unless a man can afford to lie around a month or so, or has a rich uncle back East to furnish him current funds, he had better stay East."

## How a Government Telegraph Rushes Press Dispatches.

We glean the following from the *St. James' Gazette* (London): Mr. Cameron, the able correspondent of the *Standard* in Afghanistan, first heard of Ayoub's defeat from some straggling Afghan horsemen, and as this would be an excellent "beat" on all the other London papers, Mr. Cameron at once galloped fifty miles with the precious news to be telegraphed to the *Standard*. Major Crawford, the commanding officer, instead of permitting the exclusive dispatch to be sent to the *Standard*, as it was directed, "sent the news" (We quote verbatim from *St. James' Gazette*) "first to the government and Sir Robert Sanderson, and the Commander-in-Chief, and then indulgently allowed it to be transmitted to the *Standard*," thus depriving that paper of the advantage of prior and exclusive intelligence of a great victory.

It is a crumb of comfort to know that Major Crawford has been "admonished" for his crookedness, but a government line on this side

of the water would show up some men who could discount the Major on the subject of gerrymandering private dispatches.

## Can this be Utilized as a Big Battery?

Some time ago the *Tribune* had occasion to call attention to the Ada mine, on Snake creek, in this territory. It will be remembered that mention was made of a strange kind of rock found in the tunnel of that mine that emitted a bright glow, as phosphorus does, when rubbed or hammered on with hammer or pick. This was at the time classified, for want of a better name, as phosphuretic rock. The miners in the district called it "hell's fire rock." R. N. Baskin, owner of the mine, recently forwarded some samples of this strange rock to the professors of chemistry at Yale College. On careful analysis it was found to contain no phosphorus, as at first surmised. The gangue was easily determined; but the subtle power that gave light to the rock baffled the sages of New Haven, and the broad term magnetic or electric rock was given to it. In this progressive age, when gas and coal oil begin to take a back seat, this discovery of a mountain of ready-made electricity may become a source of incalculable value to its owners. Our local telegraph offices need only run a wire from the Ada tunnel to their instruments to obtain a permanent supply of electricity. The trouble and expense of replenishing batteries, replacing broken jars, etc., would be entirely dispensed with and "hell's hole" home-made lightning always on hand free of charge.—*Salt Lake City Tribune*.

## Funeral of Edward G. Bradstreet.

The funeral of the late Edward G. Bradstreet, who died on the 26th ult., took place at Rochester, N. Y., Jan. 29, and was very largely attended by the friends of the family and members of the telegraphic fraternity. During the services a quartet of voices rendered several very affecting and appropriate selections of music. The floral offerings were elegant in the extreme. Members of the telegraphic fraternity who were in attendance from Buffalo contributed a pillow composed of the most beautiful flowers, upon which were the symbolic figures, "30." This beautiful offering was placed at the head of the casket. On the casket was a standard of flowers also contributed by the Buffalo operators, upon which were erected two telegraph poles, connected by three wires, one of which was broken. There were also other beautiful offerings of wreaths and crosses. The following operators acted as pall-bearers: W. J. Stupp, James C. Bryan, Dennis Moynihan, C. E. Terry, A. C. Orr and W. H. Lothredge. Among the members of the telegraphic profession who were in attendance at the funeral were the following from Buffalo: E. W. Abrams, A. C. Orr, C. E. Terry, F. Roesch, P. Smering, M. H. Thompson, F. L. Gardner, W. H. Mack, George W. Hann, G. J. Volger, W. H. Pinkney, M. O. Hoffman, G. H. Usher, E. C. Lapey and S. A. Farley. At a meeting of telegraphers at the American Union office, Buffalo, on the 28th ult., resolutions were adopted deploring the loss of Mr. Bradstreet.

## The Conklin Signals.

The Conklin Electric Signals, already referred to in these columns, and advertised in the present issue, have been in successful operation at several points on the elevated railways in this city for nearly a year, and give the most complete satisfaction. Fear was expressed, when they were first put up, that they would not work in the event of heavy snow. Throughout the recent unusually heavy snow and sleet storms, however, when all the telegraph wires were crushed to the ground and useless, these signals worked with what the *Elevated Railway News* calls the precision of interest accumulating on an unsettled account. In the words of the same journal, the Conklin electric signals are a success. The inventor of these signals is a well-known operator and manager on the Harlem Railroad.

Their construction is very simple, and they are entirely automatic in their working. An insulated iron bar is placed parallel with the rail at



any point desired, which, the engine passing over, an electric circuit is formed, and the danger signal immediately displayed. As the red disk swings into sight, an iron catch firmly locks it in its place, from which it cannot be shaken or jostled, but remains firmly fixed until the current is reversed and the armature brought down, when it swings again into its normal position of "safety," leaving the glass clear.

### The Chicago "School of Telegraphy."

EIGHT DOLLARS' WORTH OF FREE ADVERTISING CHEERFULLY GIVEN.

Owing to the scarcity (*sic*) of operators, the College of Telegraphy has been established in Chicago. It is proposed to place it in the reach of every one who wishes to avail themselves (*sic*) of this easy and honorable mode of earning a living, hence terms are made unapproachable. For a full course of instruction in all branches, commercial and railroad telegraphing, fire alarm, duplex, quadruplex, repeaters, etc., for \$40, payable \$10 upon entering, \$5 in one month, \$5 in two months, and \$20 after having learned, secured a position, and earned the money. Having made arrangements with all the leading companies and railroads to furnish them operators, we can guarantee a situation in every instance. Two months will qualify any one with ordinary intelligence to take a position. The money that is paid will barely cover the cost of learning. We furnish everything—instruments, ink, paper, pens, battery, etc.; you are at no expense except the tuition fee, and we wait for all our profits until you have earned it. This makes it to our interest to advance the student as fast as possible, and secure them (*sic*) positions, and makes our interests mutual.

*We want fifty operators to fill positions on May 1 for one company.*

We can give the best reference in the city that we do what we agree in the future as in the past.

*P. S.—Bear in mind we furnish all text books, manuals, etc., free of cost. NO INITIATION FEES. The only cost is tuition, as above.*

*Board and lodging, \$3.00 per week.*

N. J. SAVIERS.

### A Hope Fully Realized.

FEW people stop to think of the vast proportions to which telegraph investments have grown. An esteemed contemporary shows that an original investment of \$10,000 in Western Union is now held at \$481,700 and that the cash dividends have amounted to as much more. Contrast this exhibit and the eighty millions of dollars representing the new combination, with the following modest letter, written by Professor Morse to the assistant superintendent of the U. S. Magnetic Telegraph at Baltimore, thirty-six years ago. Observe the "hope that the receipts of each office will soon mount up to at least five dollars per day!"

"NEW YORK, MAY 24, 1845.

"DEAR SIR: I received yours inclosing Mr. Sanders' letter, which is an excellent one, and comes just now quite apropos. I showed it to the editors of the *Journal of Commerce*, who will make an article out of it, perhaps on Monday. If you are not in special want of the original letter, I will bring it with me when I come on, which will be in about a week. I have not had time yet to look after stamps for office, but will have them in hand soon.

"I am busy with the instruments. Telegraphic matters look well.

"I want all the minutiae of the last pranks of the lightning. You can give them to me when I see you.

"I hope the receipts of each office will soon mount up to at least five dollars per day; that sum will just pay expenses, exclusive of my salary and Vail's.

"Give my respects to Mrs. Rogers.

"Hoping soon to see you,

"Truly your friend and servant,

"SAM'L F. B. MORSE.

"HENRY J. ROGERS, ESQ."

### Chicago Notes.

*To the Editor of The Operator:*

SIR: Nothing definite or reliable to report regarding the near consequences of the consolidation upon the numerous offices and operating forces in this city. Many startling rumors have gained circulation to the effect that there is to occur a general "shaking up of dry bones" in official departments (and many an operator has thus found some consolation in the fact that he is not an official).

The *Inter-ocean* newspaper, of this city, and the *Pioneer Press*, of St. Paul, have conjointly leased from the Western Union and Northwestern Telegraph companies two wires, one to Washington and one to St. Paul, over which specials are nightly handled in the liveliest manner. Johnny Walker works the Washington and Dick Ledwith the St. Paul side, both elegant gentlemen and expert knights of the key.

About fifteen couples from our office recently took advantage of the fine sleighing to glide out to Englewood, a Chicago suburb about 10 miles out, where they joined in a merry dance, and supped sumptuously. During the return toward the city, and while yet too far away to even catch the glimmer of the limit lamps, they came to an inglorious "standstill." The huge conveyance had broken down hopelessly, and most of the party had either to walk in, or wait long hours for a passing train. They arrived home about 7 A. M., cold and weary, a solemn procession, in sad contrast to the gay and happy load of the evening before.

Off on vacations: Ed. Dodge, C. S. Alberts (sick), Miss Coates.

Returned from vacations: W. L. Cullen, Geo. Stapley, Billy Baker, N. Callett, Ed. Quick, and lastly, but not leastly, Mr. Frank Minor and bride (late Miss Goldsmith), to receive showers of hearty congratulations from numerous friends.

Several weeks ago a number of prominent operators met and formed a ball association. Mr. J. E. Pettit, assistant manager W. U., was elected president; Mr. E. P. Whitford, chief operator, secretary; D. L. Wilson, treasurer. The seventh annual ball is to be held on the night of Thursday, Feb. 24. Every effort will be used to make this the most brilliant and pleasurable gathering of telegraphers and their friends ever witnessed in this city. The best hall in Chicago for the purpose has been engaged, and the music and supper will be first class. Special arrangements have been completed for livery rigs, hotel accommodation, and every necessary convenience. The unique feature of the occasion will be the presence of Dr. Price's elegant perfumery fountain. Eight hundred invitations have now been issued, and deputations from Omaha, Cincinnati, St. Louis, Detroit and other places are assured.

We notice the following on committee of arrangements: A. C. Knapp, Manager Board of Trade; O. M. Stone, Manager A. & P.; L. B. Firman, American District; B. E. Sunny, Bell Telephone; C. B. Burch, American Union. Invitations can still be had on application to the secretary.

Manager Maynard had a narrow escape from being overcome with an elegant testimonial on Christmas Day. The subscription list was barely started, by some kindly-disposed individual, when Mr. Maynard, accidentally learning of the fact, immediately and earnestly requested that it go no further. The wisdom of his action, your correspondent believes, merits high commendation, and is worthy the emulation of other officials. There are, doubtless, but few who would begrudge Mr. Maynard the well-earned reputation of a popular and efficient manager, yet there are questions and principles (to say nothing of good taste) involved in the way of extravagant testimonials from employes to officials that he has no doubt recognized. The relations between the management and operators in an office of the magnitude of the Chicago Western Union office, where upward of a hundred and fifty men are employed, are peculiar and quite unlike those in the smaller interior offices, where you can count the number constituting "the force" upon the fingers of one or both hands; where honors are easy, and where official dignity may, if it chooses, get down off its pedestal and "swap lies" with the boys.

Here the manager must needs hold himself

in reserve, in an office by himself, apart and retired from the operating room. He communicates with an operator when he (the operator) is sent for, and the nature of the interview, as a rule, pertains strictly to business. He (the manager) must necessarily have few, if any, intimacies—that is, nine-tenths of the subordinates know him only in the cool and formal transaction of his official duties. He entertains no questionable bids for favor from any source whatsoever. The needs of the service are first considered, and the system of promotion extends only to those who are adjudged best qualified to attend to the detail or routine work assigned them. Hearty friendships are rarely formed between the manager and operators. There is a high fence of separation to any thing like such familiar intercourse, and each side finds a certain kind of pleasurable interest in keeping the fence in constant repair. The consequence follows that when a subscription paper is started for the purposes above mentioned, no matter what the motive of the starter, it actually goes begging. The required number of names might be obtained, and the purse might count out a magnificent sum of money, for the reason that, *under the circumstances*, few would have the hardihood to turn their backs upon an affair in which all were urgently invited to participate, yet how many of the number would be moved to sign their names by any feeling of affection, or even the charitable feeling that "it is better to give than to receive?" Of course, if the really intimate friends and ardent admirers of an official—no matter what the grade of their positions—should desire to testify their affection and admiration in the shape of an appropriate token, it would not be within the province of those less interested to question their motive or right to do so. The question of propriety would only arise when the solicitations for contributions became general, and should reach the eyes of many who would look upon the affair either with placid indifference or positive derision, and thus defeat and degrade the object and purposes sought to be furthered.

Your correspondent feels no hesitation in joining with all others so disposed in according our manager, socially, the title of a genial gentleman of well known distinction; and, officially, in testifying that his rulings appear conscientious and just, and that in his dealings with unfortunates and delinquents, he has, of late, in many notable instances, shown himself charitable and generous to a fault.

INEWRI.

CHICAGO, Feb. 6, 1881.

### The A. and P. in Chicago.

*To the Editor of The Operator:*

SIR: Your paper is read and enjoyed very much by the employes of this, the A. & P. office, but we feel slighted on account of not receiving any notice from your able correspondent in this city. We have, therefore, come to the conclusion that we had better puff ourselves at least once before the "end of the world." The boys consider the consolidation "the end of the world" to them, and that Mother Shipton's prophecy has come true.

Last spring, when the boom struck us, the office contained six men. Since then there have been from fifteen to twenty employed here. Our manager, Mr. O. M. Stone, is a gentleman from the sole of his number elevens to the crown of his seven and a half hat, and is universally liked by all. Mr. Gus Carroll, day chief, is a good humored young man, and there is not a man in the office but will work "eyes dim" for him. Mr. Chet Spencer is assistant day chief, and is assisted by Mr. "Jack" Wilbee. Mr. Fred Kreuzmarck works Cincinnati. John Robb is on Pittsburgh and St. Louis. Mr. Sam Miner sends reports to Omaha and handles all Southwest business. Mr. C. F. Patterson works Cleveland and Detroit wire. He has been out to Hot Springs for his health, and is much improved. On Board of Trade we have Mr. Ed. Angell, manager, whose rotundity of person is only equalled by his geniality. Mr. Emil Friend, our operatic critic, and the oldest man in the employ of this company in Chicago, works the Grand Rapids wire. He carries the "Chimes of Normandy" in his pocket. Mr. F. W. Kinne makes it lively with C. N. D.'s for Ottawa and Burlington.

We have an apartment exclusively for the



ladies, dubbed by the facetious "the Harem," in which Mrs. Tillotson works Milwaukee and Lafayette wires. Mrs. Prescott works South Water street and hotel wires. Her copy is a marvel of neatness and beauty. Miss Wiley works the stock yards and metropolitan wires.

On the night force are Mr. E. M. Myers, chief, and Mr. Sam. Derrickson, all-night man. The operators are: E. G. Foote, Andy Brady, Johnny Dwyer, Bill Long, and Messrs. Morris and Northway, who send reports west. Two day men work extra until 11 P. M.

At Christmas our manager was presented with a silver tea set, seven pieces, by the employes, which was a complete surprise. Gus. Carroll was the recipient of a gold-lined silver tobacco box, inscribed upon which was this: "Christmas, 1880, to A. C. Carroll from the Boys." The gift was greatly appreciated by Mr. Carroll, as showing the good will of his subordinates. Mr. Patterson received a case of Lubin's best. We all think it was presented to him by the ladies.

Wishing THE OPERATOR all the success in the world, we remain, yours fraternally,

A COMMITTEE.

CHICAGO, Jan. 26, 1881.

### The Telegraph in Denver.

To the Editor of The Operator:

SIR: Twelve months have witnessed wonderful changes. A year ago Denver was classed as an ordinary country office, requiring but two operators to handle the business. To-day ten men find employment in the W. U. office. Telegraphic communication with the interior of the State was quite limited; now there is scarcely a corner that we do not reach. But four wires entered this office a year ago; there are now twenty-one. Several old-timers were at various periods numbered among the force here. Conspicuous among them were Schermerhorn, Ed. Foote, Barney De Keyne, L. M. Smith, Fred. Loomis and John Smith. No one seems to know the whereabouts of "Skimmy." Ed. Foote, Fred. Loomis and John Smith have both been in the employ of the Denver & Rio Grande R. R. in this city for a year past.

Tom Fenton, our worthy and esteemed chief, has grown old in the service and is very popular. He has traveled extensively in this country and Europe, and is contemplating a trip to France during the coming summer, to investigate the workings of European telegraphs. Messrs. Todd and Warren have been in the service for at least twenty years. Mr. Todd is well known on the Pacific slope. George Warren, formerly of New York, has been here since last May and has shown himself to be a good, reliable man in every respect. He has decided to return to "N. Y." in the spring.

The remainder of the force consists of younger men, but all of them good operators.

There is much dissatisfaction with the small salaries paid. This office ought to pay at least ninety dollars to a good man, yet one may consider himself lucky to obtain seventy, although it costs from forty to fifty dollars per month for board alone. Operators can, therefore, do better East, and ought not to come this way, unless to benefit their health. More money can be saved out of a salary of \$50 in the East than \$80 here.

COLORADO.

DENVER, COL., Jan. 18, 1881.

### Cleveland Chronicles.

To the Editor of The Operator:

SIR: As considerable has been said lately of the Brush Electric Light, which illuminates a portion of New York City, it may be well to mention that Mr. Brush is, of course, an Ohio man, and further a Cleveland man. The company's extensive works are located here and give employment to several hundred men in their various departments. We are informed that a fifty thousand dollar order in one day is not an unusual occurrence. We exceedingly regret to chronicle the serious illness of Mr. Edgar W. Collins ("I dunno"). Although the doctors have great hopes of his final recovery, Mr. Collins is at present in a critical condition. Mr. George A. Lied has been appointed night manager of the A & P office, vice Mr. Griffin, resigned. Mr. Griffin came here from New York, and, we understand, has now re-

turned to that city, where he is connected with the A. & P. It is generally believed here that the consolidation will have no material effect upon operators, although some of them are wearing rather long faces. However, no one has received official notice that his services, etc. Among the late arrivals is Dickie Kaine, from the A. U., at Columbus. Dick can spread more ink in artistic chirography on a number one blank than any Spencerian College professor in the city. Mr. Al Babb and Mr. J. M. Cronenberg, the former of Chicago and the latter of Toledo, dropped in to see the boys a few days since. Both gentlemen were formerly operators in this office. It is rumored here that Fred Cooke, who works the New York end of the Cleveland quad, is about to consolidate. His friends in Cleveland wish him much joy, and, as our friend Gurley says, "May his cares be as scarce as hens' teeth." Lou Seibel is the happy father of a handsome boy.

BRUTUS.

### TELEPHONE DEPARTMENT.

There is, apparently, much dissatisfaction in Washington, D. C., with the management of the local telephone company.

While the American Union and Western Union operators are in a corybantic frame of mind, the telephone men smile complacently.

The telephone exchange at Taunton, Mass., is under the control of the Southeastern Massachusetts Telephone Company. Mr. Abner Coleman is the agent at Taunton.

Although it would only cost \$25 per session, and be a great convenience to members as well as others, the Pennsylvania House of Representatives at Harrisburg refused to have telephonic connection made with the railroads and hotels of that city.

A committee of Councils in Philadelphia has reported in favor of granting permission to the Bell Telephone Company to erect poles in that city, with the proviso that the company shall place their wires under ground when the system shall have been found to be successful.

Disagreements have arisen in England with regard to the management of the "United Telephone Company." At a business meeting, the other day, the discussion developed the astonishing fact that two men—Messrs. Scott and Wollaston—who had paid \$3,500 for their privilege of acting as the company's agent for the sale of telephones, are now being offered \$150,000 by the company to cancel the agreement.

Among other telephone companies not frequently heard of, besides the Bell Company, are the People's, of New York; the United States Telephone Manufacturing Company, of New York; the Eaton Telephone Company, of Brooklyn; the Hartford Company, of Hartford, Conn.; and the Law Telegraph and Telephone Company, of New York. Against some of these the Bell Company has begun infringement suits.

Mr. Gower's form of Bell telephone has been adopted by the British Post-office authorities, who have given an order for 20,000 of the instruments. It has been tried on the Southwestern Railway, England, with much satisfaction in communicating with the signal cabins on different sections of the line. The telephones were simply connected between the existing wire for working the "block" system and the "earth." Conversation was then distinctly carried on without interfering in the least with the ordinary signals. It was interesting to hear through the telephone the sound of the train itself leaving the distant station at the same time as the strokes of the signal bell announced its departure.

The *Electrician* describes a microphone invented by M. Boudet, of Paris, which transmits articulate speech very distinctly without altering the tone or causing any scratching noise. It is composed of a mouthpiece of the usual telephone kind, joined to the end of a glass tube, a centimeter in diameter, which is mounted on a jointed stand. The mouthpiece contains an ebony plate, one millimeter thick, to which is attached a piece of copper, penetrating the glass tube a little distance. In the tube are six carbon balls. At the end of the tube there is a piece of copper, which imparts the necessary degree of pressure to the carbons. In its action this microphone of multi-

ple contacts is like an ordinary middle-sized Gaiffe microphone, with six elements—peroxide of manganese and chloride of zinc—set up with a resistance of 800 ohms, with a Bell telephone for the receiver.

### DASHES HERE AND THERE.

The Brest-St. Pierre cable of the Compagnie Française du Télégraphe de Paris à New York has been repaired at a distance of forty miles from Brest.

Rolled Gold Solid 18 K. Rings, with initial or motto engraved, sent on receipt of 75 cents in postage stamps or currency. Read advertisement of G. Pettibone & Co. in this issue.

In England Mr. Fawcett has handed over to the Civil Service Commissioners the right exercised by previous postmaster generals to nominate candidates for the telegraph service.

Sanford's Liver Invigorator, advertised in another column, enjoys a very enviable reputation. A neat little pamphlet in reference to the Invigorator will be mailed free on application.

Montreal telegraph stock has fallen considerably in price on account of the consolidation of the American companies. An effort has recently been made to raise the price, by buying Montreal stock in the name of prominent Western Union officials.

Dr. Werner Siemens has applied electricity to the operation of elevators. His system, which operates through the transmission of power by the dynamo-electric machine, is as safe as the hydraulic system, and is claimed to be far less costly and inconvenient.

A new French appliance is an electric brake, which is made to operate on the wheel brake by means of electricity generated during the motion of the train and applied at pleasure. Experiments thus far made with this apparatus have been entirely successful.

A committee of Councils in Philadelphia has reported in favor of granting right of way in that city to the Mutual Union. The ordinance also provides that the said company is to give bond for \$20,000 that it will not amalgamate with any other telegraphic company.

A bill to incorporate the Mexican Southern Railway has been introduced in the Senate at Albany. It will build and operate railroads and telegraphs in Mexico. The bill names as incorporators U. S. Grant, Jay Gould, Porfirio Diaz, Russell Sage, Sidney Dillon and others. Thus it will be seen that the telegraphic field is still opening to us.

We would call attention to the new advertisement in this issue of Mr. H. Thau, 128 Fulton street, New York. This is an old established house, and in every way reliable. The only fault to be found with Mr. Thau is his modesty in the way of advertising. We hope, however, that in future he will let telegraphers know through our columns where he is and what he has to sell.

The manufactory of the Western Electric Manufacturing Company, Nos. 63 to 68 New Church St., this city, in which was stored a large number of telephones and telegraphic instruments, was damaged by fire on the 9th inst. to the extent of \$25,000. Messrs. J. H. Bunnell & Co., of 112 Liberty street, lost \$1,000 by fire on the same night, though this will not in any way interfere with their business.

A bill introduced in the legislature at Albany on the 25th ult., relating to telegraph wires in New York City, provides that after July 1, 1882, all telegraph wires within the city used by telegraph, telephone, district messenger, or electric light companies, or any corporation or person whatsoever, must be laid underground in such manner as may be agreed upon between the Mayor and the owners of such wire.

The Union Electric Manufacturing Company have just started in business in this city under favorable auspices. Mr. C. D. Haskins, an old-time operator, who was for several years in charge of a department in the factory of the W. U. Telegraph Company, is superintendent of the new company, while Mr. J. T. Covel, well-known among purchasing telegraph and telephone men by reason of his connection with the Western Electric Manufacturing Company, is general manager.



An advertisement of the Peck Artificial Ear Drums will be found in the present issue. These are the only artificial ear drums for which a patent has been granted. They are very highly spoken of and warmly recommended by physicians and those who have used them. Mr. Peck has published a neat 24-page illustrated pamphlet, which he calls "A Concise Treatise on Deafness;" in it he fully explains the mechanism of the ear and the causes and curability of deafness, also the new invention, its construction and benefits to the deaf. Copies will be mailed free on application.

At a meeting of alleged operators in London, recently, to agitate the subject of increased pay, Mr. A. S. Coates, senior "clerk" of the Central Station, used the following language: "Until within the last few years they had been called clerks, but suddenly and without warning that title had been changed, and they were now called 'telegraphists.' He did not know what they had done to deserve that title." An average American operator who watched them working their pump-handle keys would also wonder "what they had done to deserve that title." We call them "plugs" here.

The cable message from London to Australia respecting the Hanlan-Trickett match in the former city, was an extraordinary achievement in telegraphy—in fact it has never been excelled. The total extent of lines, namely, 12,000 miles, was traveled in one hour and twenty minutes. The greater portion of this time was occupied in transmitting the message through India. From Singapore to Sydney, 5,070 miles, the message occupied only thirty-five seconds in transmission. This message was repeated fourteen times from station to station between London and Sydney.

A dispatch from London, on the 31st ult., says that a prospectus has been issued in Paris of the Central American Submarine Telegraph Company, the object of which is to connect all of Central America with the United States and Europe by cable—with tributary land lines—to be laid from Balise to Cuba, Spain having granted a concession therefor. England will guarantee for a term of twenty years the payment of the sum of £1,000 annually as the proceeds of government dispatches to and from British Honduras. The capital of the company is to be £120,000.

The committee on mercantile affairs of the Massachusetts Legislature heard, at Boston, on the 4th inst., the petition of Chester Snow, J. N. Stover and others for incorporation as "The States Union Telegraph and Telegraph Construction Company," for constructing, maintaining and operating lines of telegraph in any part of the United States and Canada. The capital proposed is \$500,000, with the right to increase it to \$15,000,000. It is stated that it is the intention of the proposed incorporators, if they get a charter, at once to commence the construction of 8,000 miles of the American Rapid Telegraph in various parts of the country.

In speaking before the Senate committee at Albany, Feb. 9, Dr. Green, president of the Western Union Telegraph Company, referring to the Moller bill, now pending, to force all telegraph companies to put their wires under ground, said that he hoped the Legislature would move cautiously. With the experience of a few days ago fresh in mind, the Western Union Company proposed to lay a number of through wires under the surface, as soon as it had decided upon the most practicable plan. But if it were forced to lay every wire out of sight, it would shut off three-quarters of its branch offices to hotels, etc., and would ruin the business of the telephone and district telegraph systems.

The agitation for increased pay continues among the operators in England. The Postmaster General, speaking at Manchester, on the 4th ult., he alluded to the discontent existing among the post office telegraphists with regard to pay and promotion, and promised that their representations should receive his most careful consideration, and that if he found he required more facts he would ask some of the provincial employes to come and see him in London. In answer to an inquiry from one of the Irish members of Parliament, the Postmaster General gave a similar assurance, stating that he would spare no pains to arrive at a just conclusion with regard to the alleged grievances.

Some French physicists contend that the musical notes produced by Prof. Bell in disks of mica, india-rubber, metal and wood, by holding them in the path of a rapidly interrupted beam of light, are really due to heat and not to light. M. Mercadier has obtained like sounds from ordinary gas-lamps, without employing lenses to concentrate the interrupted beam, by simply bringing the receiving disk near the source of light. Even a plate of copper heated to bright red produced very distinct musical notes, which died gradually away as the plate cooled to a dull red. Disks coated with silver on the side exposed to the ray gave very feeble sounds, but when coated with lampblack the sounds were strong.

The annual meeting of the Dominion Telegraph Company was held at Toronto last week. The receipts of the year were \$229,994, being an increase over last year of \$31,455, or 15.89 per cent. The increase in mileage of wire during 1880 was 1,450, and the number of additional offices opened 58. The American Union having fulfilled the terms of its lease to the letter, resolutions were adopted authorizing the board of directors, under the advice of counsel that the interests of the shareholders of the company are fully protected, to sanction the transfer and assignment to the consolidated companies of the lease made by the American Union.

St. Paul, Minn., is boasting over the possession of a boy, ten years old, whose left hand is a wonderfully strong magnet. The Minneapolis Tribune says that metal articles of light weight attach themselves to his hand so that considerable force is required to remove them. Knives, pins, needles, buttons, etc., enough to cover his hand, will thus attach themselves so firmly that they cannot be shaken off. With heavy articles, however, the boy complains of sharp pains darting along his arm. In a less degree his left arm and the whole left side of his body exerts the same power; but it is not at all manifest on his right side.

Edison has just been beaten in the Patent Office, in the suit regarding the invention of the Edison as against the Maxim electric light, both of which are similar. The Examiner of Interferences has decided that Edison was not the first inventor, and that the patent must be issued to the United States Electric Lighting Company, representing the Maxim claims. This is the famous platinum lamp, which created such a panic in gas stocks about two years ago, and sent the stock of the Edison Company up to an almost fabulous figure. It is claimed by the United States Company that other important contests relating to incandescent lighting will now be decided in its favor, as it was the first in the field in this country.

Mr. John McKee, proprietor of a livery stable in Pittsburgh, has lost his life in consequence of a telegraphic "bull." Mr. McKee was in Greenville, Pa., about February 1, when he received a telegram from home announcing that "the old man" was dead. The agitation that such an announcement would naturally create was no doubt increased by the apparent flippancy of the message; at all events, Mr. McKee prepared to return home immediately. He had but a short time in which to catch the train, which was already in motion when he arrived at the station. To further complicate matters two women who had stopped on the platform to kiss got in his way, and the result was that in trying to get on the cars he fell under the wheels, and received injuries which caused his death several days later. It afterward turned out that the message which led to this unfortunate train of events had reference to a valuable mare which had been driven to death by a drunken man, and should have read "The old mare is dead."

A Western Union Telegraph operator last evening sent a sealed dispatch to this office addressed as follows:

M. A. RINE,  
Editor North American.

It was brought to the editorial rooms, and there arose a lively discussion as to whether it should be received and opened or not. There is no member of the staff named Rine, and the news editor racked his brain in vain trying to make out from his knowledge of the telegraphic alphabet that it was a miswriting of the name of somebody attached to the establishment. At

length he decided that he had the constitutional power to go behind the returns, having charge of telegraphic news, and did so at the risk of opening another man's private telegram, reasoning that a telegram sent to a newspaper office presumably contained news for the paper. The envelope was found to contain some shipping intelligence for the marine editor, and a grand union roar of laughter resounded through the building, so loud that it knocked two editorials and a display advertisement into pi.—*Philadelphia North American*.

The Central News, a press association of London, has established a printing telegraph system for reporting the doings of the Houses of Parliament to the leading London daily papers as well as the London offices of several provincial journals. The work was and still is all carried on under the supervision of Mr. Henry Van Hoevenbergh, of this city, who went to England especially for that purpose. Under date of Jan. 26 Mr. Van Hoevenbergh writes: "All of the papers use the news every day, which is the best evidence of its practical value. The system is perfectly organized and works like a charm. Yesterday the House met at 4 P. M., and continued in session until 2 P. M. to-day, the instruments giving to all of the subscribers a full report of the proceedings, 22 hours of continuous working, during which time not an instrument lost a word of the report. I think this is something unprecedented in the history of reporting telegraphs, and, for a new system, is wonderful. We have a Morse line (Continental alphabet, of course) from the house to the Central News office, and the news is read to the transmitting operator, who sends it over the instruments. The printers kept up with the Morse throughout the report, and when the House adjourned, at 2:05 to-day, it was on the instrument at 2:07. The papers cut off the tape at regular intervals and paste it to the sheets, from which the compositors set it up."

When the stock service and the news service of the Central News is complete, they expect to use about 4,000 instruments. The instruments are all made by Messrs. J. H. Bunnell & Co., of this city, who have now under way a large order for them.

In our December 1 issue we noticed the case of little Freddie Balder, of San Antonio, Texas, whose mother told him God would punish him if he misbehaved. We chronicled the fact then that on the 11th ult. Freddie went home from school, and finding his parents gone, went to the cupboard, sliced off a piece of bread, buttered it, then went to the front of the house, sat down on the gate-post and began eating. In a few seconds a stroke of lightning knocked him off the fence, burned up his hat and his shirt bosom, singed his eyebrows and hair, and left him in danger of becoming both blind and deaf. Later advices from that region show that the incident has caused great excitement, as it was certainly not an ordinary flash of lightning which struck the boy. His eyes are tightly closed and swollen, while his face is marked with plain red welts, more like the cuts of a whip than burns. The boy himself says somebody shot him, although the skin is not broken in any place. His little sister says the fire came from above and passed from where Freddie sat around the house toward the ditch and then disappeared. The curious incident has led to the recital of similar cases occurring in that region, notably one of a gentleman being so struck while riding in a stage, and half of his body being burned to a blueish color. Dr. Graves, of San Antonio, expresses the opinion that the burn was caused by thermoelectricity, from the fact that the flame was seen to take a circuitous course, after passing the boy, while an aerolite invariably keeps on a straight line, in the direction of the earth. Dr. Graves also says the color of the burn indicates that it was electricity. The doctor says the stricken child is in a critical condition.

## NEW YORK CITY ITEMS.

### Echoes from 195.

The lady operators thought the sleet storm was "just splendid," as they were excused for two days.

The consideration shown by Chief Leslie for



the operators under his charge during the trying time at Williams Bridge is much appreciated by the men.

Mr. Jim Lewis, a new arrival from Indiana, stands 6 feet 1, and weighs 220 pounds. He has consequently escaped the usual series of jobs and jokes that new arrivals are subjected to.

Mr. James Lewis, of Jeffersonville, Indiana, now of 197 Broadway, was united in marriage Jan. 25, by the Rev. Henry Morgan, in Boston, to Miss Lizzie S. Cope, of Louisville, Ky.

The operators at 195 are much gratified at the liberality of the company in allowing the claims of all expenses incurred by them during the storm, and for what might, in some cases, be called excessive claims for "extra" service.

The election of Mr. Conrad Myers as Assistant Chief Operator was confirmed by Manager Dealy. Mr. George Stainton, who was Mr. Myers' chief competitor, was also appointed Second Assistant. These appointments give great satisfaction to the operators of the office.

Some of the "quad" men are ordered to skirmish around on way wires for an hour or two in the morning, and it is remarkable how attentive they are to calls on the Hudson River wires, while Jersey and New England may call till their hands are paralyzed.

It would be an injustice were not the thanks of the large number of men, assigned to duty at Elizabeth during the blockade, tendered Manager Barr for his successful efforts in making the New York operators comfortable in every way during their sojourn in Jersey.

Fred Cushing occupies a chair at the switch, and no one is more competent to fill it than he. Fred is an enthusiastic student of electricity, and in conjunction with Mr. Moreland, expects to introduce an invention that will be appreciated by any telegraph company.

*Frank Leslie's Weekly* contains some good pictures of the W. U. operating room. In reading the descriptive sketch which accompanies the cuts, one is led to imagine that the writer must have received his points from Jules Guthridge, when Jules was in one of his descriptive moods.

Mr. McInness was sent up to the cable house, at Thirty-fourth street, to test wires. He got hold of a wire with a weak battery. To settle the question as to whether it was dead or not, he "tasted" it just as a dynamo battery was put on. For several hours afterward his speech denoted the presence of hot pudding in his mouth.

During the recent storm Tommy Hynes, operator at Williams Bridge, established a reputation among New York operators as the prince of good fellows. When the delegation from 195 swept down upon him, he did not lose his head, but provided circuit after circuit, and personally arranged for the wants of the "inner man," and in every way endeavored to make the stay of his visitors as pleasant as possible.

Mr. Fred Hutchinson was selected by Prof. Gray to test the capacity of his latest invention, the Harmonic Quadruplex. The following remarkable averages were attained: Tuesday, Feb. 8, his average for five hours was a fraction less than 70 messages per hour, or a total of 347 messages. Wednesday, Feb. 9, for same number of hours, 75 1-5 messages per hour, or a total of 376. This is conceded, to be the best time on record. Mr. J. W. Walton, "Jw.," of Boston, was the receiver.

## PERSONALS.

Superintendent Holmes, of the Erie Railway, is confined to his home with a severe illness.

Mr. Andrew Scott, clerk and operator in Col. Wilson's room, Chicago, Ill., has been appointed manager at Cedar Rapids, Ia.

Mr. T. B. Reese has transferred his services from the Cairo & Vincennes Railroad, Grayville, Ill., to the P. D. & E. R.—same place.

A Western Union office has been opened in the Lincoln House, Boone, Iowa. Miss Mollie A. Fenton has been appointed manager.

D. P. Burnett, 38 years old, a well-known telegraph operator, committed suicide at Chicago,

on the 7th inst., by shooting himself through the head.

Mr. H. D. Pender, second son of Mr. John Pender, M. P., of telegraphic fame, is dead. He established the first telegraphic cable communication with the island of Cyprus.

T. T. Windsor, employed as clerk and operator at Newcastle, Pa., on the P. & L. E. R. R., has accepted a similar position in superintendent's office of P. & W. R. R., Allegheny, Pa.

The many friends of the Erie telegraphers will be pleased to learn that arrangements are going forward for the third annual reception, to be held at Paterson some time next month.

A telegram dated Paris, Tenn., says that on Feb. 10 John N. Edwards, telegraph operator at that place, fatally shot James Champion, who had made insulting proposals to his (Edwards') wife.

Mr. H. B. Spencer, chief operator in the Dominion Telegraph Company's office at Ottawa, has been appointed train dispatcher on the Canada Central Railway, in place of the late Duncan McQueen.

Mr. Charles M. Clark has resigned the management of the G. & S. C. telegraph line at Globe City, Arizona, and associated himself with Mr. W. H. Glover, formerly night chief San Francisco W. U. office, in the publication of the *Globe Chronicle*.

Mr. W. H. Owen, American Union manager at Middletown, N. Y., has accepted a position as train dispatcher on the C. & St. L. R. R., at St. Louis. He is well qualified to fill the new position, having previously held a similar one on the Midland R. R., at Jersey City.

Manager J. W. Stacy, of the Houston, Texas, W. U. office, was the recipient, on Wednesday, Feb. 2, of a handsome gold-headed cane, from the employees of his office, as an expression of the esteem in which he is held by his subordinates. On the cane is inscribed the "signs" of each of the operators. The presentation was made by Night Chief J. W. Brooks.

We have received from a reliable correspondent on the Erie Railway a protest against the growing evil of "students" on that road, in defiance of the prohibitory orders of Superintendent W. J. Holmes, and Division Operator W. J. Lipple. Our correspondent is prepared to furnish either of those popular and able officers with a list of the offending operators.

CHAMPAIGN, ILL.—The I. C. train dispatchers are Messrs. H. A. Ward days, and G. H. Galvin, nights. Mr. James Heit is I. B. & W. man, with Wharfle as owl. Mr. Myers has charge of the Wabash office. Mr. S. L. Nelson is Manager W. U. Mr. Rhodes has left us, to seek fame and fortune in the far West. Mr. James Morgan, night press man at Quincy, spent the holidays with his parents and many friends here.

C., ST. P., M. AND O. RY.—Miss Bessie Carroll has left the Merrillan Junction office, and accepted a position in the Winona City office. Her withdrawal from the road is much regretted. Mr. F. E. Blasen, for the past four years operator and agent at Valley Junction, has resigned and taken a position in the company's office at Hudson, Wis. Mr. W. S. Kemp, for many years conductor, has been appointed train master, and is located at St. Paul. Mr. O. T. Critchett, from "P. O." office, Chicago, has arrived at St. Paul.

PIQUA, OHIO.—The Western Union office, of which Mr. C. E. Machier is manager and operator, has eight wires. Fred Turk is the messenger. Mr. Machier if also manager of the Telephone. Messrs. Eddie Kitzmiller and Ed. Munger work the Exchange day and night respectively. The American Union office, presided over by Mr. George W. Morton, with Gust. Kuemmerling as messenger, has two wires. Mr. Theodore Sills is agent on the D. and M. road, with Messrs. James Lawder and Louis Graef operators, day and night. At the Pan Handle depot Mr. E. D. Baxter is agent; Mr. Ed. Yager, day operator and clerk, and Mr. Ash. Leonard, night operator.

The clerks and operators in the Portland (Me.) W. U. office recently presented the popular cashier, Mr. J. H. Wentworth, with an elegant Knights Templar charm and the following address: Mr. Wentworth, I desire that you *Malone* me your ears for a short time, and let what I say find a cell by itself and *Brickett* up that it

may have a perpetual resting place there. We have not requested your presence here to say that we hope you will *Livermore* useful life than heretofore. That *Wood* be unnecessary, as you have always occupied as useful a sphere as you would have had you been a *Saylor* and crossed the wide ocean, or a *Smith* with brawny arm, earning your daily bread by the sweat of your brow. It was not for this purpose we called you here, but for the far pleasanter one of wishing you a happy new year and expressing to you our kindly wishes in general.

TAUNTON, Mass.—The Western Union and Atlantic & Pacific companies are now represented here by nine different offices, in addition to the Telephone Exchange and Fire Alarm Telegraph. Mr. Charles W. Crandell has charge of the Western Union; he also has charge of the A. & P. office, assisted by Mr. John Q. Ryder. Mr. Arthur M. Waldron officiates at an important branch office at the Weir; Mr. Horace E. Crowell is back in his old quarters at X. y. office; R. Crocker at G; Frank Hudson at M u; James M. Briggs at D g, and L. C. Fuller at G c. Mr. Austin G. Ryder, with Mr. Charles A. Austin as assistant, is in charge of the Old Colony depot office at Wales street. This is an important repeating station. Two of the Phillips keys are in use here, and they are much admired. Mr. Charles E. Cummings is manager of the American Union.

FITCHBURG RAILROAD (main line).—At the Superintendent's office, Boston, Mr. W. A. Seward has charge of the train sheet, with Mr. F. J. Benthall, formerly of Concord Junction, as assistant. Miss Nellie Hayes remains at Fd. office. Mr. Geo. A. Prescott, for many years billing clerk at Sd. freight house, has been compelled to resign temporarily, on account of failing eyesight. He has been succeeded by Mr. M. D. Sullivan. A sketch of the offices along the line may interest the fraternity. At Charlestown we have Messrs. W. A. Sprague and E. B. Blake, day and night respectively; at Waltham, Miss Harding, Miss Englewood having accepted a position at 109 State Street, Boston; at Lincoln, Mr. Hutchins; at Shirley, Mr. Wilson; at Concord, Mr. H. H. Chapman, with Mrs. C. to assist him; at South Acton, Messrs. Haywood and William Hunt; at West Acton, Mr. Stevens; at Littleton, Misses Addie Patch and Emma Ireland; at Ayer Junction, a very busy point, Miss M. J. Bancroft; at North Leominster, Mr. G. P. Whidden, assisted by Miss Florence Barrett. Mr. W. F. Stevens, formerly agent and operator at this point, has been transferred to the general freight office, Boston. Mr. D. A. Rand, assisted by Mr. Gove and "Cn." is at Fitchburg. Mr. O. J. Fenton acts as circuit manager and general superintendent's chief clerk.

## BORN.

Jan. 31, 1881, to Mr. F. C. Lacey, operator W. U. Telegraph Office, Topeka, Kan., a son.

## MARRIED.

CREAMER—WALTER.—At Baltimore, Md., Nov. 9, 1880, by Rev. A. B. McKenzie, Mr. J. Marion Creamer, Manager of the American Union Telegraph Company at Petersburg, Va., to Miss Jennie Walter, of Baltimore.

VAN ORDEN—DREW.—In Brooklyn, N. Y., Jan. 26, 1881, W. A. Van Orden, of the Board of Trade telegraph office, this city, to Cecilia Drew, of Stamford, Conn. No cards.

## DIED.

BURNETT.—On the 7th inst., at Chicago, D. P. Burnett, aged 38 years.

BRADSTREET.—At Rochester, N. Y., Jan. 26, 1881, Edward G. Bradstreet, of the American Union office at Buffalo, aged 26 years.

BALLARD.—At Ottawa, Ill., Feb. 3, 1881, Lovira H., wife of C. L. Ballard, Manager Western Union Telegraph Company, aged 25 years.

LOGAN.—At Jersey City, Jan. 31, 1881, John F., aged 2 years and 8 months, son of James N. Logan, operator A. & P., 18 Broad street, New York city.



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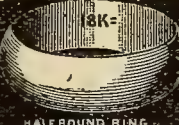
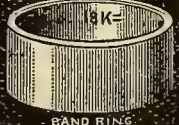
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25 Maiden Lane, New York.

THIS OFFER NOT GOOD AFTER JUNE 30TH 1881

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Yours respectfully,

Andover, O., Aug. 5th.

A. W. GATES.

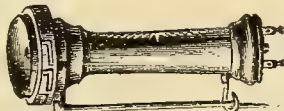
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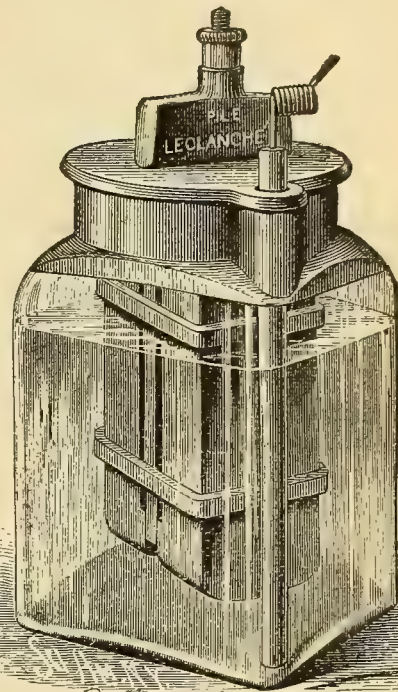
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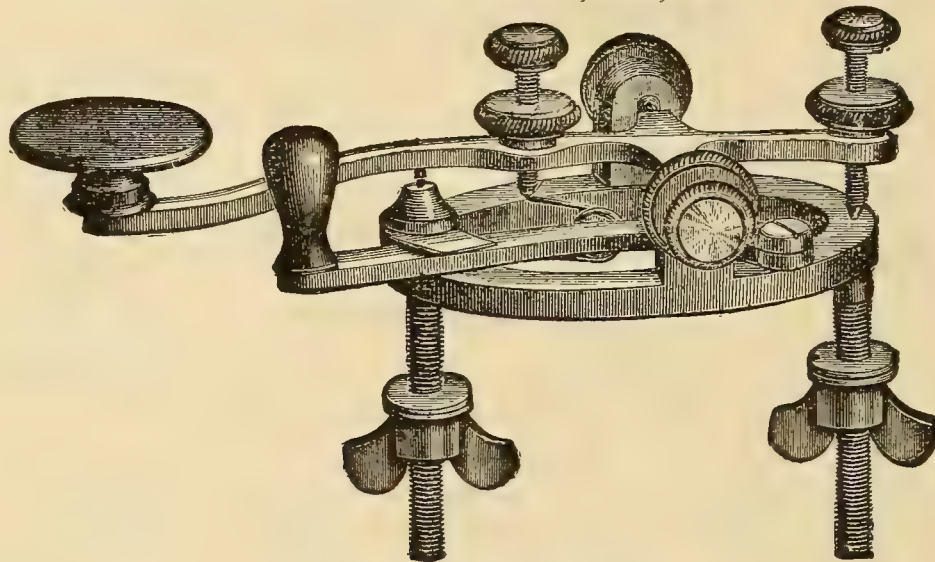
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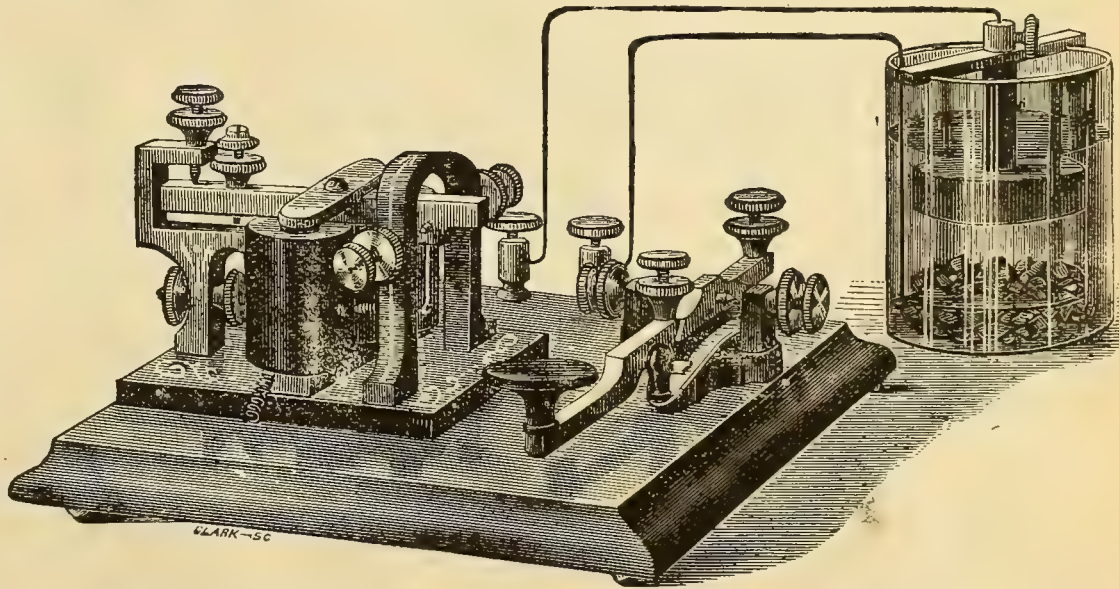
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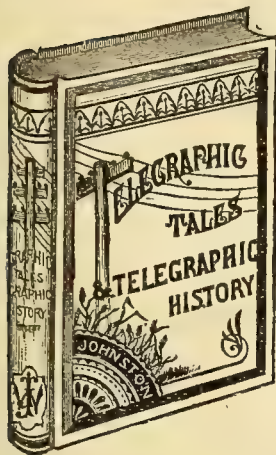
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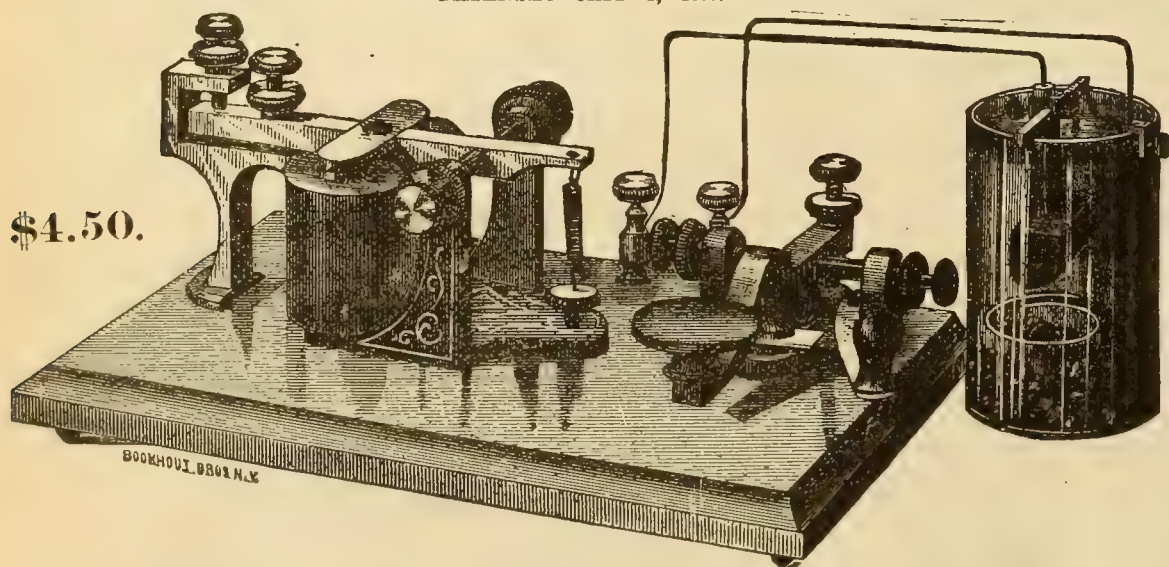
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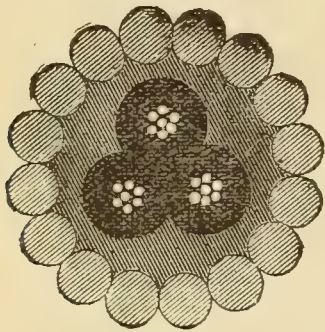
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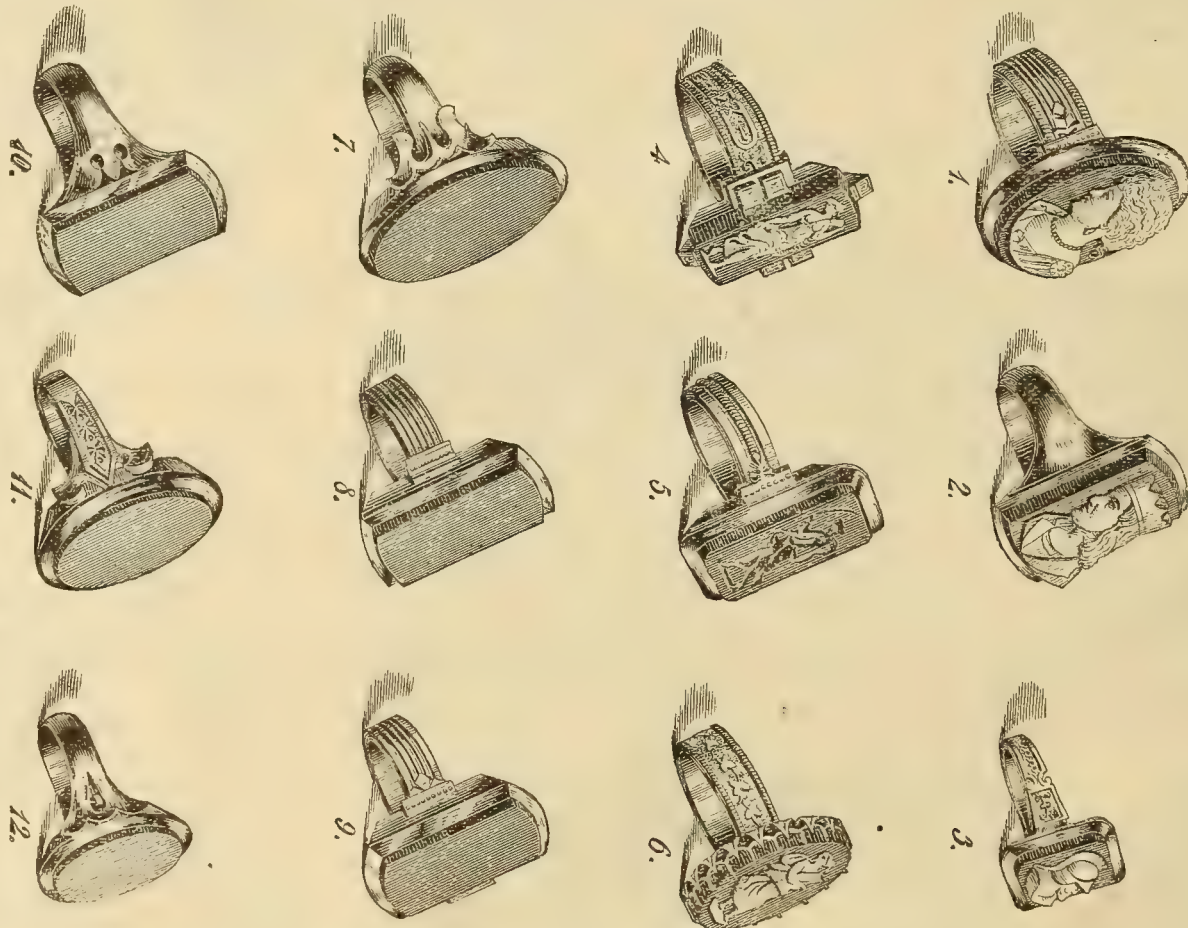
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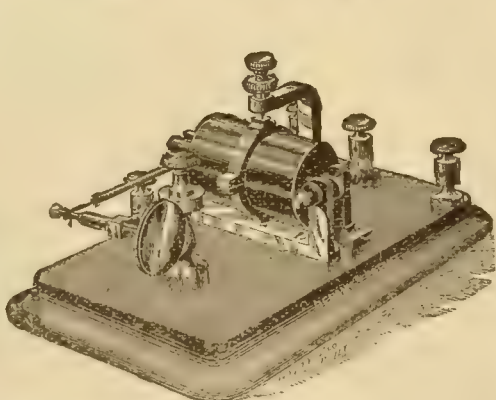
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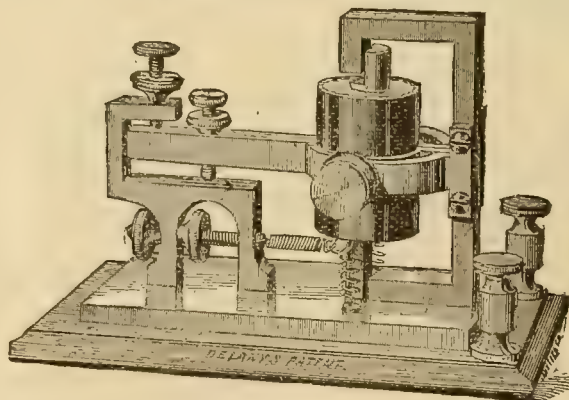
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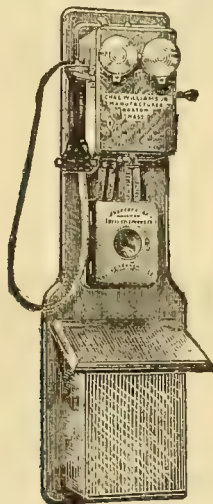


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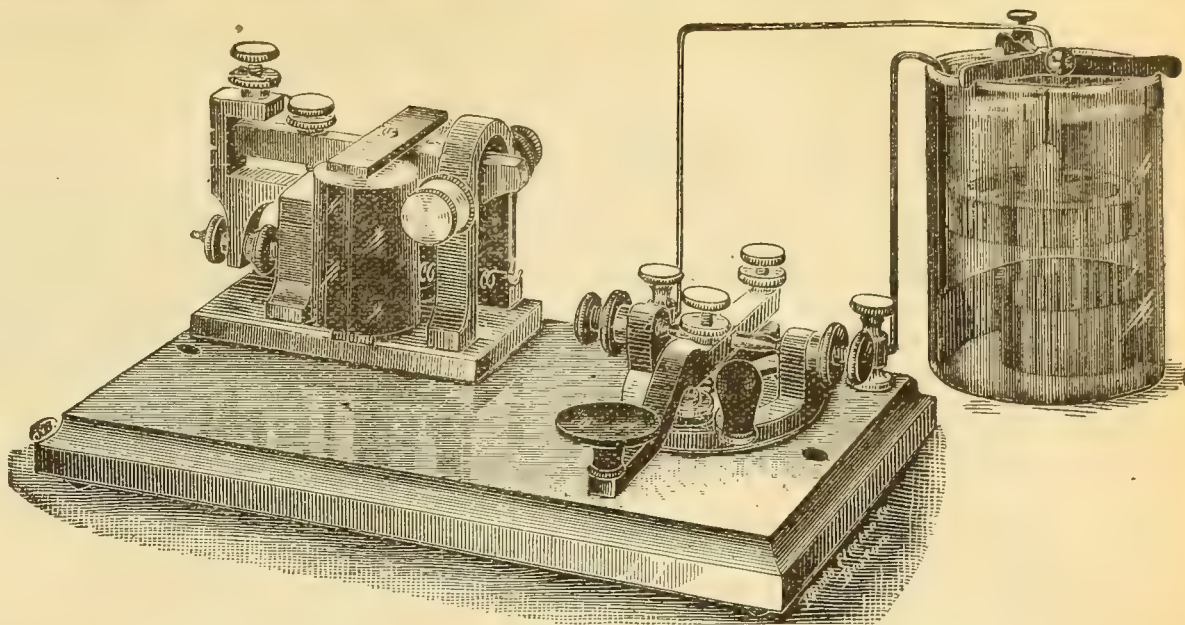
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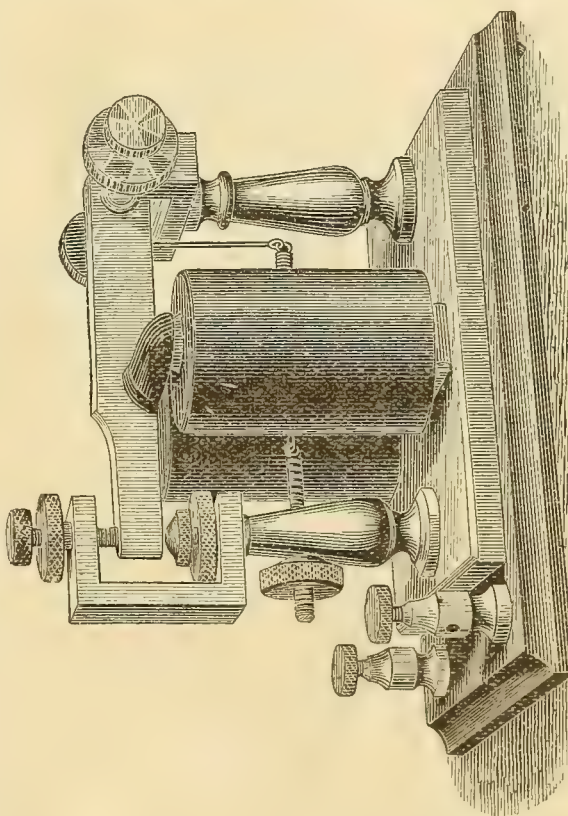
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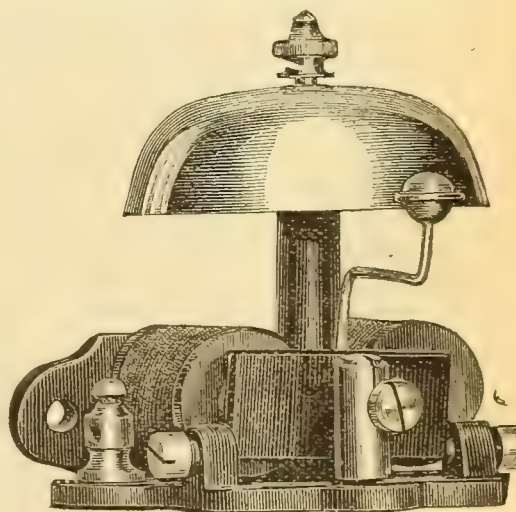
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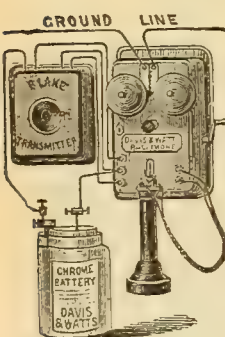
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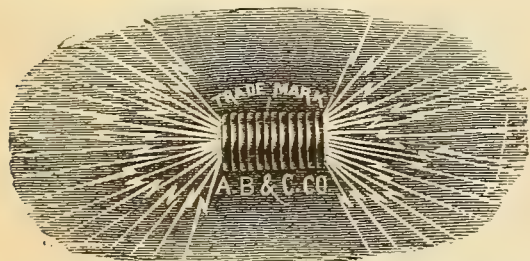
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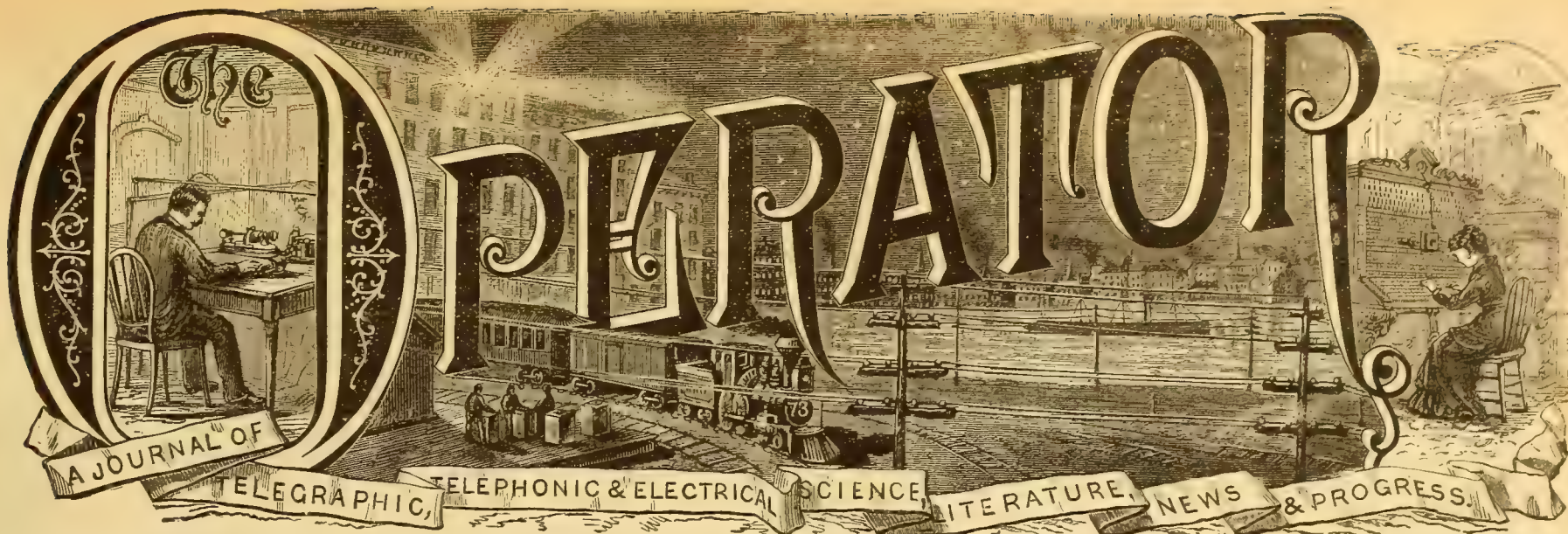
THE METROPOLITAN

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VOL. XII.—No. 5.

NEW YORK, MARCH 1, 1881.

ONE DOLLAR A YEAR.  
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### AN OPERATOR'S MUSINGS.

Often sitting at my table,  
In my office, warm and bright,  
Listening, as across the wire  
Flies the chatter, gay and light,

Have I thought how very happy  
Is the young and blithesome heart,  
Never heeding all the sorrow  
That the dash and dot impart.

Oh, how lightly we are writing  
Words that cause the teardrops flow;  
Seldom ever does their sorrow  
Cause our hearts with sadness glow.

Pity? Aye, perhaps a moment's  
Pity may but fill our mind,  
Then forget—a sudden sunshine  
In bright words of joy we find.

Death! Why need we heed its terrors,  
While all else is bright around,  
When such keen and lively pleasure  
In the ticking noise is found?

Aye, perhaps the clash and clatter  
May but tell us all too soon,  
Sorrow that may wring our heartstrings,  
Of a comrade's early doom.

So, why need we borrow trouble?  
Let thy noisy music make  
Life as bright and gay and cheerful—  
From the present sadness take.

### The Telegraph Agreement—The Cable Companies Kicking Back.

According to the agreement of Jan. 19, the consolidation was consummated on Feb. 19 by the delivery of the \$80,000,000 of stock, and finally, on the 24th ult., by the virtual transfer of the property of the American Union and Atlantic & Pacific to the Western Union.

At a meeting of the Western Union Telegraph Company, held in this city, Feb. 19, 325,973 shares voted in favor of the increase of the stock to 800,000 shares of \$100 each and 100 against the increase. The one hundred shares which were voted against the increase belong to Mr. William S. Williams, who had already, as reported in the last issue of THE OPERATOR, brought one of the suits against consolidation. Jay Gould, William H. Vanderbilt and Governor Cornell were present at the meeting. Most of the shares were voted by proxy. On the same day the certificate of the increase of the capital stock of the Western Union Telegraph Company to \$80,000,000 was filed at Albany, N. Y., with the Secretary of State, the messenger

bearing the certificate traveling by special train.

Meanwhile, the case has been pending in the law courts. On the 17th ult., in the Superior Court, the motion of W. S. Williams vs. the Western Union Telegraph Company and the Union Trust Company was argued. In this case the question involved is different in many respects from the point at issue in the recent action which was brought in behalf of Mr. Rufus Hatch, to prevent the consolidation of the companies. In Mr. Hatch's case the point to be settled was the legality or illegality of the amalgamation under the laws of the State of New York as affecting the rights of stockholders in corporations. In the action brought by Mr. Williams an issue in law and equity was brought up. It is claimed by the last mentioned gentleman that the managers of the Western Union Telegraph Company are doing him a great injustice by making a bargain to give certificates of the stock of their company amounting to \$15,000,000 for only \$5,000,000, which is represented by the American Union franchise. Mr. Williams says that he being a Western Union stockholder, the consummation of such a bargain as that above mentioned is nothing more nor less than taking money out of his pocket without his consent. The Chief Justice reserved his decision, but gave his assent to the prospective meeting of the Western Union stockholders, called for that day.

Mr. Williams had based his suit simply upon hearsay and circumstantial evidence, and not upon his own knowledge and belief. To remedy this defect in his complaint he obtained, in the Superior Court, an order for the examination of the defendants, with a view, practically, of making them testify against themselves. The persons to be examined were Dr. Norvin Green, President of the Western Union, and the Directors of that company—Messrs. Edwin D. Morgan, William H. Vanderbilt, John Van Horn, Cornelius Vanderbilt, Moses Taylor, Wilson G. Hunt, Darius O. Mills, Anson Stager, Jay Gould, Russel Sage and Thomas T. Eckert. Mr. Edward King, President of the Union Trust Company, was also directed to appear for examination. In response to this order of the Superior Court, Messrs. Jay Gould, Russell Sage and others appeared on the 23d ult., but before the proposed cross-questioning was commenced, their counsel moved to vacate the order for their examination, on the ground that Mr. W. S. Williams was confederated with Rufus Hatch, the Direct Cable Company and the French Cable Company,

in instituting suits in the courts for the purpose of injuring the stockholders of the Western Union Telegraph Company, and depreciating the market price of the stock. Under these suits the directors of the Western Union were required to be in two places at the same time. They were asked to attend an examination to the injury of their business. The object was to unnecessarily harass them. They were asked to appear, under the false allegation that they were conspirators, for the purpose of trying to obtain information from them to convict them of conspiracy. After an exhaustive argument Chief Justice Sedgwick announced that he would reserve his decision on the motion to vacate the order of examination, and so the Williams suit ended for the time being.

On Feb. 16 the Direct United States Cable Company filed a bill of complaint in the United States Circuit Court against the Atlantic & Pacific, the Western Union and the American Union Telegraph Companies and the Union Trust Company, praying for a perpetual injunction against the defendants to restrain them from any acts to carry into effect the agreement of consolidation entered into by the defendant telegraph companies on the 19th of January, 1881. It was sought to restrain the Union Trust Company from receiving or delivering any shares of telegraph stock in pursuance of this agreement. The case was further argued on the following day, when Judge Blatchford said there were complicated interests in the case and it was not quite clear what the counsel desired. After further general talk with counsel he granted a restraining order, applying solely to the property of the Atlantic & Pacific Company, and, while not interfering with the action of the Western Union stockholders, enjoining the proposed action as a result of that meeting so far as the transfer of stock for Atlantic & Pacific stock was concerned, and restraining the Union Trust Company from delivering Western Union stock to stockholders of the Atlantic & Pacific at present. The motion to make the restraining order permanent was then set down to be argued on the 24th ult.

On that date several amendments to the bill of complaint were read, among them an agreement dated Dec. 18, 1880, in which Mr. Jay Gould made a contract for the construction of two submarine cables, to connect North America with Europe, for \$6,000,000; also an agreement of the same date by the American Union Telegraph Company with Mr. Jay Gould and his associates, by which all cable messages received by that



company shall be sent by the cable route of Mr. Gould and his associates.

After argument by counsel, the further hearing of the case was postponed until Saturday, Feb. 26, at ten o'clock. Judge Blatchford, however, expressed the opinion that the Western Union company has the same right under the law to maintain and operate its lines as they are to-day, after this transfer has taken place, as it had before the 19th of January, and that the United States has nothing to do with the consolidation of the stock of the companies.

Argument was resumed on the 26th, and several additional affidavits put in evidence. Judge Blatchford said that he didn't see that the parties to the suit were apart at all on what is really the substantial matter in the case; but if the plaintiff insists on an injunction against the completion of the agreement of Jan. 19, 1881, that is another thing. The case was then postponed until Monday, 28th ult.

The action of the Direct Cable Company, in filing a complaint against the consolidation, was promptly followed by similar action on the part of the "French Cable Company." On the 19th of February this company filed in the United States Court, in this city, a bill to prevent the carrying out of some of the provisions of the articles of consolidation. In this case Judge Blatchford granted a temporary injunction until the 24th ult. On that day the case was not called, and it will most likely remain in abeyance until the case of the Direct Cable Co. is settled.

In both of the latter cases it is evident that the cable companies feel no solicitude for the interests of the general public, since they have themselves consolidated within the past year. Their anxiety is mainly on this account: The old Western Union had an exclusive contract for the interchange of business with the Anglo-American Cable Company; the Atlantic & Pacific a similar contract with the Direct United States Cable Company, and the American Union had a contract with the new French Cable Company. The contracts were made for a long term of years and for the exclusive exchange of business by the respective companies. If it were possible for the new Western Union Company to fulfill the provisions of these separate and antagonistic contracts the equitable division of the business between the cable companies would be extremely difficult. The cable companies, to be sure, have what they call a working arrangement for the division of business under their existing contracts with the land companies, but this pooling arrangement did not contemplate the union of the telegraph companies. This state of affairs would appear to be sufficiently complicated, but the interests of the several companies might possibly be adjusted harmoniously if even this was the worst. But the present cable companies evidently apprehend danger from the new American cable company recently organized, and they foresee in this movement on the part of Americans great competition and bitter hostility to interests which at present belong exclusively to the English. It has simply become a struggle for existence between these English cable companies for a share in the rich spoils of American telegraphy, with the great nightmare of two new American cables confronting them. As a matter of fact, without the new American cables no injury could be done to the existing cable companies by the consolidation. For instance, the Atlantic and Pacific stock has been held by the Western Union, and the two home companies have worked together with the utmost harmony for years, without complaint from the Direct Cable Company. Moreover, if the business of the consolidated land lines should be entirely diverted from the Direct cable, it would not injure the profits of that company in the least, since under the terms of the recent cable consolidation, if it should not carry a message it would continue to receive its pro rata of the receipts from all cable business for thirty years, while its contract with the Atlantic & Pacific has only twelve years to run. The same argument will apply to the case of the French Cable Company, with which the American Union has a contract. They all fear, not the land line consolidation, but the new American cables.

The new company—the Merchants' Telegraph

Company—appears to be thoroughly in earnest and is going ahead nicely, but with its small capital (\$300,000) it does not inspire much enthusiasm outside of the brokers, the general impression being prevalent that when it becomes important enough to be worth buying up or crushing out, the monopoly will promptly put up the necessary \$300,000 to buy it up or put down the rates so low as to crush it out.

The legislators have been less active in their wild opposition to the consolidation. Since our last issue the Illinois Senate has passed a bill to tax telegraph companies two per cent. on their gross earnings. In the Pennsylvania Senate, on the 23d ult., Mr. Keeffer introduced a bill prohibiting any person from offering for sale any stocks, unless he or she shall be the actual owner of the same or attorney for the owner. On the same day and in the same body Mr. Smith introduced a measure preventing telegraph companies from consolidating, and declaring any such consolidation since Jan. 1, 1874, to be invalid. As the last-named bill is in the nature of an *ex post facto* law, which is forbidden by the Constitution of the United States, its fate will doubtless be a hard one when some one explains that fact to the Pennsylvania Senate.

At Albany, N. Y., a resolution passed the House on the 17th ult., and the Senate on the 23d ult., its preamble setting forth the proposed increase of Western Union capital to \$80,000,000. The resolution is as follows:

*Resolved*, That the Attorney-General of this State be and is hereby directed forthwith to implead the said corporation in an appropriate action in the Supreme Court in the nature of a writ of *quo warranto* to the end that if the law does not permit such watering of the capital stock of corporations by fictitious issues of paper scrip, judgment to that end shall be had and the like evil prevented.

On the 23d ult. a resolution was passed in the Ohio House of Representatives directing the Attorney General to proceed by *quo warranto* against any telegraph company or companies that may proceed to perfect consolidation or amalgamation, in violation of the act of the present month, which places the telegraph companies under the same restrictions as to consolidation as those governing railroad corporations, and which has prevented the consolidation of railroads running on parallel lines.

The postal telegraph scheme has been heard from once since our last issue. At the regular monthly meeting, in this city, of the Board of Trade and Transportation, a report was made which concluded as follows: "We are also of the opinion that all the States should at once take such action as they can by limiting charges, and in every other constitutional way to counteract the effect of the recent consolidation, and also to revise their laws (wherever possible by constitutional amendment), and embody therein the best features of the laws of Massachusetts and the new Constitution of Pennsylvania relating to consolidations, stock-watering and other corporate abuses." Resolutions were then adopted, urging the present Congress to take all necessary action to secure information regarding the workings of the postal telegraph in Great Britain, in order that it may be adopted in the United States without unnecessary delay.

A pamphlet has appeared in this State in answer to the argument of Dr. Green, used before the select committee at Albany, in which he took the ground that the Western Union had the right "to increase its capital stock," as proposed, under the articles of association of the old Mississippi Telegraph Company, which afterwards became the Western Union. Like all the other pamphlets which invariably appear in times of excitement, this one has had about as much effect on the consolidation as pouring so much water on a duck's back would have on the duck. They rather seem to like it.

It is stated in some quarters that the railroad war between the B. and O.; P., W. & Baltimore and the Pennsylvania Railroad is an outgrowth of the recent telegraph war. It will be remembered that some time ago the American Union agreed to pay the Pennsylvania Railroad \$100,000 a year for privileges on that road then enjoyed by the Western Union. With the consolidation of the telegraph companies Mr. Gould changed his mind, after treating with the Pennsylvania to be allowed to abrogate the contract made between that company and the American Union. It will

be recollected that proceedings in the suit in this matter were temporarily suspended a few weeks ago, in the hope that a compromise could be effected. The Pennsylvania refused to yield, and now it is authoritatively stated that Mr. Gould threatens to cut that company off from Washington.

But the most striking and effective opposition to the new Western Union was manifested on the 21st ult., at a meeting of "The Anti-Monopoly League," at Cooper Institute, in this city. Mr. L. E. Chittenden presided, and there were also present Mr. Peter Cooper; Gov. Reagan, of Texas; Judge Jere S. Black and other distinguished citizens. A bitter antipathy to monopolies of all kinds was manifested in the speeches, but in a manner sometimes more lusty than judicious, and it was evident that, whatever the character of the speakers are, they were catering to a decidedly Granger element. It is unfortunate that such remarks as "Cut his throat" should have been interjected into the speeches; that the name of President-elect Garfield should have been hissed, and that the local poet should have been permitted to beguile the glee club present into singing "The Anti-Monopoly Song," to the tune of "John Brown," and of which the following are two specimen bricks:

For Vanderbilt and Company 'tis indeed a gilded age,  
But poverty increases and 'tis thus that tramps are made;

Shall it, will it, be continued when the people's votes  
are weighed? As we go marching on.

No! we'll hang Jay Gould (in effigy) on a sour apple  
tree,

And bring to grief the plotters of a base monopoly;  
From the heartless ghoul's of booty we've determined  
to be free. As we go marching on.

Many of the speeches were quite consistent with the singing, but all were, at least, evidently honest, earnest and sincere, even if in danger of occasionally dropping into Kearneyism. Finally, a series of resolutions were adopted which, if they were incorporated into the law of the land, could be construed to mean almost anything in the nature of confiscation; and they would be apt moreover to stagnate trade and enterprise and put an end to the judicious investment of capital.

Working operators, who understand thoroughly that cheap—too cheap—rates mean low salaries to the employes, can have little concern with these leagues, beyond the general hope that the company will be wise and firm enough not to yield to any wild clamor for sweeping reductions, either in rates or salaries.

The presence at this meeting of such a great number of eminently respectable and influential characters shows that much feeling has been aroused; though, as we believe, unnecessarily. The "monopolists" are not the men to forget these facts, and will profit by them; so that we look for a judicious policy, which will be honorable and just alike to all—the public and the employes.

#### Directions for Building a Short Telegraph Line.

BY T. D. LOCKWOOD.

"J. H. M." wants "explicit directions for putting up a short line for two offices, running only one wire, grounding at each end," and also desires to know whether "it can be done without switchboard and relays?"

We take the opportunity offered, with the letter of our correspondent as a test, to give general directions for the cheap construction of a private line.

As our correspondent is a Morse operator, it is but fair to assume that the line he has in view is to be a Morse line; and a Morse line, accordingly will be the one we shall speak of.

Three essential elements are requisite in the simplest line of telegraph, namely: The apparatus for generating or developing the electricity; the line or conductor, whereby the electricity is transferred from one point to another and communication established; and the transmitting and receiving apparatus, by which the electrical messenger makes itself apparent and forwards and interprets its language.



Although there are many ways of generating electricity, for the purpose in hand the simplest apparatus is a galvanic battery. The usual arrangement in this country being to keep the battery on closed circuit, it is necessary to choose one that does not soon exhaust itself when its circuit is closed. It is also well to adopt one that is economical in maintenance, and that does not need much attention.

Such a one may be made as follows: Take as many glass jars as are necessary, in size six inches wide by eight deep. Take also a corresponding number of round flat plates or sheets of copper, that will easily go in and lie on the bottom of the glass jars. Then cut a number of pieces of gutta percha covered or kerite copper wire. Bare one end of each piece for about an inch and rivet (not solder) it into a couple of holes previously drilled in the copper plates near the edge. The wire must now be extended up the side of the jar, to make connection with the next zinc.

All the coppers, being placed inside and at the bottom of the glass jars, are now covered with sulphate of copper (blue vitriol), crushed to about the size of a small filbert. The layer of copper sulphate may be three inches deep, and is to be covered first with a piece of cloth or blotting paper, cut to fit the jar; the blotting paper must then be covered with a layer of fine sawdust, packed down rather firm—while on the top of the sawdust is placed the plate of zinc. The cell may then be filled up with water, and when put in operation the cells used are connected in series, the zinc of one being connected to the copper of the next, and so on. The battery, when first set up, will not produce much current, and so should be set up several days before it is required, and placed on short circuit—each cell connected to the next—and a copper wire then connected from the zinc at one end to the copper at the other.

The conducting medium is next to be considered. For long lines numbers 8 or 9 galvanized iron wire is generally used, strung on large glass insulators; but for a short private line, numbers 12 or 14 is sufficiently large. This may be bound with tie wires to what are called pony insulators.

For the transmitting and receiving instruments, a key and sounder are all that are necessary at each station.

Having thus stated what is necessary to construct the line, we will now describe the method in which the several elements are put together.

The line may be, for example, a mile long, with a station at each end. It is not necessary to erect poles at every point where the wires are to be supported; although when this is done the line is more exclusively under the control of the builder at all times.

The poles necessary to carry one wire need not be more than twenty-five feet long. They should be planted not less than three and a half feet deep, and must not be less than three inches in diameter at the top. At road crossings the poles must be sufficiently high to clear anything liable to pass under.

The line wire is supported on glass insulators which are screwed on to wooden brackets, which in their turn are spiked to the side of the pole, near the top. If poles are not used, the ridge-poles of houses or barns can frequently be utilized, the insulator being in that case fastened on what is called a ridgepole iron. Irons can also be fastened on the corners of chimneys for the reception of insulators. After the supports are all in place, the wire, which for such a line should not be larger than No. 12, may be strung. It may be pulled up very tight if the work be done in cold weather, and reasonably tight in any case. After the line wire is strung, it should be brought down to a window at each of the terminal stations, and there terminated by winding the end of the wire back on itself. A hole must then be bored through the window frame and a rubber covered wire passed through. About six inches of the outside end must be stripped and carefully scraped until clean and bright. The iron line wire must also be scraped or filed bright for about four inches on the outside of the last insulator, which we suppose is just above the window, and the end of the covered wire is tightly and closely bound round the scraped portion of the iron wire. The joint should then be soldered—indeed, every joint ought to be soldered.

The end of the rubber-covered wire which is inside of the window is also stripped, and is spliced carefully to a piece of office wire, preferably No. 18, covered with braided cotton. This wire is either tacked down with double-pointed tacks, to the window frames or partitions and walls, until it reaches the instrument table, or strung on porcelain picture knobs. The latter plan is the best for plaster walls, and, indeed, in nearly every case, as it gives a choice of route, enabling the constructor to take the ceiling if he desires. On arriving at the instrument table the wire should be carried down behind it and brought up through holes in the table, which we shall hereafter designate.

In choosing a table for the instruments, it is best to take an ordinary table or desk of unpainted wood. A table covered with green painted cloth or enameled cloth should be avoided, or, if used, a place should be cut out for the key so the key does not touch the painted surface at any point. Such a table, when left as it is and the key placed over the enameled surface, often causes an escape which, if unsuspected, is hard to find.

The table need not be large. The sounder should be placed at the left hand side, and the key at the right, so as to be readily accessible to the right hand of the operator. The instruments should also be placed at the inner side of the table, in order that the operator's arm may obtain a rest while sending.

After the sounder is placed in the required position, it is screwed down, both to retain it in position and to give a solid sound; and a hole is bored through the table at each end of the sounder binding posts. Larger holes are bored for the legs of the key, which is then placed in its proper position and also screwed down.

The office wire attached, the kerite is led under the table, and brought up through one of the holes opposite the sounder; the covering stripped off and the end doubled on itself and inserted in one of the sounder binding posts. A short wire, also covered, is led from the other sounder binding post to one of the legs of the key, under the table; while from the other leg of the key a covered wire is run down the wall and continued to one pole of the battery; that is, either to the zinc or copper of one of the end cells of the series. If the wire from the key is connected to the zinc, which is best, the other cells must all be connected together as before described, and the cell at the other end connected by a wire to the ground.

For a ground wire at a terminal station, a water or gas pipe should be used, if possible. The pipe should be filed clean and bright at a point outside of the meter, for a surface of at least two inches. A piece of bare copper wire, of No. 18 or 20 gauge, and about four feet long, should then be taken and coiled tightly and smoothly round the pipe, and an end about six inches long left, which may be spliced to the wire leading from the battery. The ground connection should in all cases be soldered. If a pipe cannot be obtained, a hole must be dug until the earth, which is always damp, is reached, and a plate of iron, to which the wire from the key is attached, must be buried in it. It is not well to ground on a plate of one metal at one end and another metal at the other, as currents are then set up on the line.

If the line is one mile long, of No. 12 wire, with stations only at the two ends, the sounders should be about 16 or 20 ohms resistance each, and seven cells of battery may be tried, the number to be increased if necessary. If the line is but half a mile long, the sounders need only be from 8 to 10 ohms resistance. While if it is two miles long they should be 35 ohms.

The battery may be all at one end of the line. Lightning arresters should be placed at each station, between the window and the instruments. If the line is less than a quarter of a mile long, it is far better and more reliable to run a return wire than to complete the circuit through the earth. It must be understood that at the office where the battery is not located the wire must be run directly from the key to earth, the line of circuit then being from the ground at station 1 to the copper pole of the battery, though the battery, from the zinc pole of the battery to one leg of the key, from the other leg of the key to the sounder, thence to line, out to station 2, to sounder, key and ground. No relays nor switch will be required.

### Mr. Sawyer's New Book on Electric Lighting.

ELECTRIC LIGHTING BY INCANDESCENCE. By William Edward Sawyer. New York: D. Van Nostrand, Publisher. Cloth; 189 pp.; 96 illustrations. Price, \$2.50.

Mr. Sawyer has long applied himself to the subject of electric lighting. It is not, therefore, as a theorist that he writes, but as one who knows what has been done, and fully realizes what has yet to be accomplished to render popular electric lighting a success.

The first three chapters in the book before us treat of generators of electricity and their adaptability to lighting. About ten lines are given to the galvanic battery which, on account of its expense, is then summarily dismissed, the remainder of the space being devoted to a consideration of the merits of the dynamo-electric machines which are or have been used, commencing with Wilde and ending with Sawyer. Incandescent lamps are then considered, and the somewhat curious fact noted that experimentalists in this branch of electric science invariably follow the same beaten track, passing from platinum to iridium, then to both, from these metals to carbon and asbestos, and finally to carbon alone.

Various methods of manufacturing electric light carbons are described, and liberal quotations from English patents show that the charge brought against some inventors, "that they do not take pains to become acquainted with what has already been done," cannot be justly brought against the author. The most improved methods of protecting carbons in a vacuum, or in a carbon-preserving atmosphere; the subdivision of the light, and different arrangements of circuits, are described in language which is plain. The last few chapters show several forms of electric switches and regulators, and also discuss the idea of general distribution, which, after due credit being given to one Starr, is ascribed to Mr. Sawyer himself, who patented a method in August, 1877.

The book concludes with a chapter on electric lighting in its commercial and financial aspects, comparing the incandescent electric light with that of coal gas—the result of the comparison being largely in favor of the electric light.

The author, in the main, treats brother inventors with commendable respect and impartiality. He writes in a plain, common-sense style, avoiding unnecessary technicalities, and no one who may read the book can fail of having a clearer perception of what has been and is being done in electric lighting, and a better ability of judging for himself of the value of the periodical effusions of the daily press on this subject.

The mechanical execution of the book is good, the type being sufficiently large for comfortable reading, while the illustrations are fair and fully serve their purpose, that of illustration.

### The New York Electrical Society Organized.

The second meeting of the above society, on Wednesday evening last, was very largely attended, about 100 persons being present, among them several who have been prominently connected with the telegraph and kindred professions for many years, and whose presence at the meeting must have been highly encouraging to the promoters of the infant society. Letters of regret were also received from T. D. Lockwood, of Boston; D. H. Craig, Gerritt Smith, Lant S. Jones, Robt. Brown, H. W. Pope and W. Holmes, all of New York.

The meeting was called to order at 8:15 by Mr.



F. W. Jones. Mr. Jones said the first thing in order would be the reporting of the Committee on Constitution and By-Laws, and, as he was chairman of that committee, he would call upon Mr. J. D. Reid to occupy the chair temporarily. Mr. Reid accepted the position, and the report was read by the secretary.

On motion, the secretary re-read the constitution and by-laws in articles and sections. In most instances no objection was made, and they were approved as read, but in a few cases slight alterations were made.

The constitution as adopted gives the society the name of the New York Electrical Society, and its objects as the advancement of electrical knowledge among its members, the establishment of a library, a reading-room and a laboratory. Any person desiring to aid in attaining the objects of the society is declared eligible for membership. The officers are to be a president, six vice-presidents, a secretary and a treasurer. An executive committee, consisting of the president, first vice-president and four members, is also provided for, and permission given the executive committee to appoint a librarian. The initiation fee is placed at one dollar, and the dues at three dollars per annum, payable quarterly in advance. The meetings are to be held on the first and third Wednesdays in each month.

After the constitution and by-laws had been disposed of, Mr. Ashley moved that all present be considered charter members by signing the roll. Carried.

In addition to those whose names were published in last issue of THE OPERATOR, the following signed the roll:

John C. Hinchman.	C. Flood.
James D. Reid.	J. McKenzie, Jr.
R. T. Clinch.	E. J. Brandell.
A. S. Brown.	Chas. Ward Raymond.
P. P. Hauff.	George E. Holbrook.
L. R. Hallock.	Thomas B. Hynes.
P. H. Vander Weyde.	D. Harmon, Jr.
A. L. Bogart.	F. T. Viles.
W. J. McElroy.	J. T. Covel.
M. H. Redding.	F. C. Beach.
Wm. Hadden.	J. H. Emerick.
G. B. Prescott, Jr.	Wm. F. Snyder.
E. A. Leslie.	Chas. A. Willson.
C. E. Lawson.	G. H. Pride.
H. L. Bailey.	W. D. Schram.
F. Jessen.	F. W. Baldwin.
J. H. Bunnell.	S. S. Bogart.
C. M. Cunningham.	J. M. Phelan.
Charles D. Haskins.	P. J. Casey.
W. J. Hamilton.	H. D. Burghardt.
A. T. Grinstead.	W. E. Lockwood.
F. E. Kinnman.	W. A. Fenn.
Gustavus G. Wagner.	R. Carter.
A. A. Knudson.	W. C. Pearse.
C. A. Randall.	D. B. Grandy.
A. R. Wright.	S. B. Van Nortwick.
F. E. Wilcox.	J. W. English.
G. A. Newton.	David W. McAneeny.
C. F. Hutchinson.	E. G. Cochrane.
S. K. Dingle.	Joe B. Stewart.
M. Sullivan.	John B. Taltavall.
H. Wallace.	G. W. Gardanier.

The following names of those not present were also added to the list:

William Mackintosh.	Joseph Christie.
S. S. Schreff.	J. E. Fenn.
A. F. Larned.	G. A. Hamilton.
W. K. Smith.	Wm. Orton, Jr.
H. H. Ward.	S. D. Field.
J. H. Dwight.	W. J. Dealy.
A. E. Sink.	C. S. Shivler.
George A. Mudgett.	H. W. Pope.
W. Holmes.	G. G. Ward.
W. H. Baker.	J. H. Sabine.
Robert Brown.	L. S. Turner.
Gerrett Smith.	

The following officers were elected for the ensuing year:

President, F. W. Jones.  
Vice-Presidents, Geo. B. Scott, P. H. Vander

Weyde, Gerritt Smith, W. J. Dealy, Geo. A. Hamilton, and Geo. G. Ward.  
Secretary, J. W. Moreland.  
Treasurer, M. Brick.

The meeting then adjourned, to meet at the same place, the United States Hotel, on Wednesday evening, March 2, at eight o'clock.

### Electrical Sparks.

BY F. H. GREER.

The electric arc will melt steel.

No foreigners are allowed to work for the telegraph administration in England or France.

They can work one Wheatstone on quad with sounders, but can't work two Wheatstones or two dials well on the quad.

Clommond's thermo batteries are much better than the tray batteries of Sir Wm. Thomson for working the Thompson recorder (cable instrument) on very short circuits.

Over one hundred sounders are now used in the General Postal Telegraph office, London, whereas, a few years ago there was not one. The Quadruplex and Duplex there all have sounders.

In the Postal Telegraph office in London, "sound boxes" for throwing out the sound from the sounder are used extensively. They are about two feet high and shaped something like the sounding boards over pulpits.

The effect of the electric light on plants is wonderful. A very beautiful experiment is to plant mustard seed in three jars, keep one under the effects of both day and electric light, one under the effects of electric light only and the third under the influence of sunlight only.

Where a great amount of light is wanted in one place the electric light is from 20 to 133 times as cheap as gas. The actual result obtained at Albert Hall, London, where the science of putting a brilliant light high up in preference to putting a number of feeble glimmers all over a building was exceedingly favorable to electric light.

Siemens' new electric lamp requires no clock-work, but has ratchets, levers, etc. Common shot in a brass cup acting as a weight presses the levers and adjusts the carbons. A wire sieve is placed underneath to catch any burning coals that may drop from the carbons, and a wire netting is underneath the sieve to catch any pieces of glass that may drop should the globe become broken. There is also wire netting around the white globe.

### Telegraphers' Aid Society.

The Committee of Arrangements of the above Society—Messrs. Jas. K. Calvert, S. A. Coleman and J. W. Moreland—have issued the following circular:

The regular annual meeting of the Telegraphers' Aid Society will be held in the parlors of the United States Hotel, on the corner of Fulton and Pearl streets, New York City, on Sunday, March 13, 1881, commencing at 3 P. M.

The business before the meeting will comprise the reception of reports from the officers and from the auditing committee, and action thereon; action on proposed amendments to the constitution and by-laws, a notice of which is subjoined, and the election of officers and members of standing committees for the ensuing year.

The presence of every member in the city at the time is requested. Should circumstances, however, prevent a personal attendance, it is desirable that the members so situated be represented by written proxies in the hands of members who will certainly be present.

#### REVISION OF THE CONSTITUTION.

A committee was chosen by the executive committee on Nov. 14, 1880, to prepare a revision of the constitution and by-laws, and report to the society at the coming annual meeting. The report of the committee is now ready, and embraces various important amendments and a complete re-arrangement of the laws of the society. The report, with certain recommendations contained therein, will be presented to the society on March 13 for its consideration.

J. W. MORELAND, Secretary.

### The Youngest Telegrapher.

The frontier telegraph office at Williams' branch is managed by Hallie Hutchinson, a little girl nine years of age. A gentleman who returned from there a few days since says that Hallie is the most remarkably intelligent little elf he ever had the pleasure of meeting. She handles her instrument with the success and precision of an old operator. Recently, when election returns were coming in and the whole country was wildly excited to know the results, little Hallie sat at her instrument, her eyes aglow with intelligence, and gathered in the news from all over the Union, while dozens of brawny men crowded round to hear what the lightning brought, and to admire the wonderful skill of the little operator. While controlling the wires as she does Hallie is not unlike other little girls of her age in her habits and inclinations. For instance, one end of her operating table is piled full of baby dolls, and she spends a great deal of her leisure time dressing and nursing them. Brown County may claim the youngest telegrapher in the world.—*Waco (Texas) Examiner*.

Texas is mistaken. New Jersey can beat this. The five-year-old son of Frank Donahue, operator at Perth Amboy Junction, Rahway, N. J., is a good operator, and works the wires with the skill of a veteran.

F. M. H.

### A Canadian View of the Consolidation.

The Montreal *Shareholder*, commenting upon the satisfactory progress of the Dominion Telegraph Company during the past year, says:

The position of the Dominion Company under its able, energetic and deservedly popular management, has been a steadily improving one, as will be readily seen by the following figures compared with the progress of the Montreal Telegraph Company:

	M. T. Co.	D. T. Co.
1875 Gross receipts.....	\$550,493	\$146,397
1880 Gross receipts.....	550,840	299,494

The gross receipts of both companies for 1880 include the telephone sale, the Montreal Company having received \$75,000, and the Dominion Company \$69,500 for their respective interests. Gratifying as this improvement must be, it is likely to be still greater in the future, as the Dominion Company is now a part and parcel of one of the greatest telegraph corporations that this or any other country has ever known, and which is to be managed by the ablest corps of telegraph managers that the century has produced. We do not believe that this consolidation means an increase of rates in the United States. On the contrary, we think that it will more likely lead to a reduction as soon as the details are arranged and expenses reduced; and that a great and successful effort will be made to give the public a service so satisfactory that an opposition company will be an impossibility.

### Married by Telegraph.

CHICAGO, Feb. 17.—A curious marriage took place at the cantonment in the Bad Lands, Dak., yesterday, between Frank M. Shoppie and Henrietta Louisa James, Rev. Mr. Stevens, of Bismarck, officiating from that place by telegraph. Frank S. Moode and Engineer Deutsche were witnesses that the parties responded to the electric marriage ceremony at one end of the wire, while the *Pioneer-Press* correspondent and several others saw the clergyman perform his duty at the other. The questions and answers were written, telegraphed and responded to, and a blessing was pronounced in the usual form.

### An Operator Without Arms.

Philip O'Connor, of Andover, Allegany County, N. Y., from his birth has been without the use of his arms. Not to be baffled by this misfortune, however, he has made his mouth and toes serve him for many of the uses of the hands and arms. With these organs he has gained a remarkable dexterity in writing. He can also use a telegraph key with his toes or mouth, transmitting messages with wonderful skill and speed.



As an operator he can readily "receive by sound." He sews and threads a needle very quickly; plays "mumblepeg," and whittles long clean shavings with his toes. For some time he has been selling newspapers about Andover, taking the money in his mouth. He is a great reader, very intelligent for one of his years, and discusses with fluency and good sense the latest topics before the public. During the absence of the regular bookkeeper, O'Connor performed these duties for a merchant of Andover in a skillful and satisfactory manner.—*Elmira Free Press.*

#### "Western Union Athletics."

The annual spring meeting of the above club is set for the third week in May (day to be designated hereafter). The following events will be contested:

Green walk (one mile).  
Handicap walk (one mile).  
100-yard run (handicap).  
220-yard hurdle race (handicap).  
Half-mile run.  
Half-mile run for messengers in uniform.  
Quarter-mile run.  
1 mile run.  
Running broad jump.  
3-legged race.  
Tug of war, teams for day and night force.  
Tug of war, teams from line men.  
First and second medals in all events, excepting broad jump, for which one medal.  
No medals for 3-legged race or tugs of war.  
Entries, accompanied by a fee of 50c., should be sent or handed to Wm. Maver, Jr., Secretary of Committee of Arrangements, 197 Broadway, N. Y. Events open to all telegraphers.

#### Milwaukee Melange.

To the Editor of The Operator:

SIR: On Tuesday evening, Feb. 15, the Milwaukee telegraphers held their first annual reception and ball, at Saverance's Hall. Being the first affair of its kind ever attempted in this city, a great deal of anxiety was entertained as to its probable success. Tuesday evening, however, found a very pleasant party assembled, notwithstanding the unpleasantness of the weather, and everything passed off in good shape.

Congratulatory dispatches were received during the evening from Philadelphia, New York, Boston, Chicago, St. Paul, Omaha, Ogden, and one from the redoubtable "Old Man Kavanagh" as follows:

"SNOWBANK, Feb. 15.

"Secretary Milwaukee Bam:

"Bogardus, Hank Cowan and myself are on the road, but afraid we won't be able to reach you in time owing to the snow drifts. We wish you all a pleasant time. Dance some New port for us. '73' all around. O. M. K."

The committees were as follows:

Executive committee: C. H. Haskins, A. Weller, E. M. Shape, C. L. Fortier, H. M. Scott, D. H. Henshaw, W. R. Barker, E. J. Peabody.

Reception committee: R. E. Fitzgerald, J. N. Bradley, M. A. Farley, H. J. Ramsey, E. J. Hickey, A. S. Wilson, W. J. North, J. J. O'Brien.

Floor committee: J. R. Van Buskirk, P. M. Williams, E. A. Patterson, J. M. Marlet, G. W. Anderson, J. J. McGucken, T. F. Ramsey, treasurer; G. H. Davie, secretary.

Three hundred invitations were issued and even that number proved insufficient for the demand. Altogether, it was a grand success, and it is hoped the talk of a permanent organization will assume definite form.

In your last issue, in speaking of fast time, credit is given "Mr. E. M. Sharpe," of Cleveland, for the fastest sending of the official tests in 1868. As this rather touches our local pride, we beg leave to make a correction. Mr. E. M. Shape, of Milwaukee, the worthy chief operator of the W. U., did the sending from this office, Mr. E. Curry, now secretary of the N. W. Telegraph Co., Kenosha, Wis., being the receiving operator at St. Paul.

The N. W. force has been somewhat disarranged by the temporary absence of Chief Barker, caused by too much rheumatism. Mr. B. made a brave stand, but was finally beaten and obliged to take a vacation, leaving Night Chief Fitzgerald in charge and Operator Brady, of the day force, in Mr. F.'s place, as night chief,

This causes the employment of Messrs. Nicaud and Brown on the night force. Both are genial and accomplished telegraphers. We are informed (though not officially) of the engagement of a N. W. lightning manipulator to a west side Bell. If this thing continues, there will not be an unmarried man on the force by spring! It becomes our pleasant duty this week to chronicle the marriage of Mr. J. R. Van Buskirk, the well-known and very popular operator at the Wisconsin Central "Fd." office, this city, on Tuesday evening, Feb. 8, at Christ's (Episcopal) Church, to Miss Hattie Powell, the handsome and highly accomplished daughter of Mr. W. H. Powell. The happy couple have the hearty congratulations and good wishes of their hosts of friends.

OCTOPUS.

#### Notes from Texas.

To the Editor of The Operator:

SIR: Mr. John T. Patton has resigned here and accepted a position at the Galveston Cotton Exchange. Though young in the service, John possesses the requisite qualities for a coming star. For the vacancy two "plumes" thus far have been tried. The first remained two days. He expected a failure, as he kept his big coat on and devoted his whole attention to a railroad line near the door. The second one merely looked in, heard the confusion of thirty instruments, said he would be around in the morning, and, like that other Arab, silently stole away. The company are again in search of a first-class man for sixty dollars.

Mr. Henry Stanberg, our old day chief, has left us, accepting service at the Auditor's office of the Texas & New Orleans R. R., as operator and clerk. Mr. John McNabb, of New Orleans, now presides over the day force. Houston's present force is as follows: Mr. James W. Stacey, manager; Mr. John McNabb, day chief; Mr. Geo. H. Leach works the Galveston wire, and Mr. Phil. Fall the Brownsville circuit. All messages to and from Mexico pass through "Phil's" hands, and when he lets go of them, Mexican or otherwise, you can gamble on them.

Prof. F. Derbyshire, who has more heart and good humor to the square inch than anyone else, works the Menger Hotel line, when not otherwise engaged. We look for cards from the Professor shortly. Mr. J. W. Brooks is night chief, and has no superior as an operator and a gentleman. Mr. Wm. E. Carberry is press man, and does his work in approved style. He has been seriously thinking of leaving us, but Col. Stacey has induced him to remain. Mr. Jerry Newton is our cashier, and affably waits upon customers. He is a most clever gentleman, and prevents many an operator from "spacing" between pay-days. Mr. Charles Randolph is bookkeeper, and the society man of the office. Old Charlie Hoffman last, but not least, weighing 210, is our go-ahead repairer and batteryman. Charlie is a Texas landmark.

The cable steamer, after lying off Point Isabel nearly three weeks, on account of severe weather, made her landing to-day, completing connection between Texas and Tampico, Mexico. The English contractors who are doing the work expect to finish the section from Tampico to Vera Cruz, and to turn the cable over to the cable company by the latter part of the present month, when it will be immediately opened for business. Mr. Driver is manager of the Texas end, assisted by three operators. The latter receive ninety dollars per month for the first year and one hundred for the second.

The Western Union has a big finger in this cable, and I suppose they will virtually control it.

LCIE STAR.

HOUSTON, Texas, Feb. 14, 1881.

#### Chicago Notes.

To the Editor of The Operator:

SIR: There is a scarcity of news here just at present, though this is in part made up for by rumors of changes, official and otherwise, which it is supposed are soon to take place as a consequence of the "new deal." In the mean time, all are indulging in grand and jolly anticipations regarding the ball on the 24th. The prospects are encouraging. We will be able to give you a report of it for the March 15 issue.

A certain operator of this city, whom we may call Smith, recently took a seat in a street car,

opposite a prepossessing young lady. They had casually glanced into each others eyes. He thought: Lovely; probably a banker's daughter, or a clergyman's idol. She thought: Doubtless distinguished; plumed knight, or a count. Both had sighed, and modestly relapsed into a reverie of reserved but mutual admiration, when the car door was opened, and in walked a valuable friend from Oshkosh; and, closing and backing the door, this was his greeting: "Hello, Smith, what time did you get off last night? Everything out of gear, they say! Saw a letter for you, respectfully referred, you know; look out for the 'sweat box' (managers office)." You can imagine Smith's feelings, and the young lady's surprise, as she doubtless revolved in her mind the presumable and infamous nightly practices of Smith and his liability to inherit, instead of marble halls, a home in a dungeon; and, also, the inquiring glances of the other passengers. Smith says he has not a revengeful disposition, but that if he could have placed a "stuffed club" in the hands of the conductor and the chief engineer of that street car, and could have witnessed the hurried exit of Oshkosh, his soul would have rejoiced.

How long it takes some operators to learn that heretofore "unwritten law," which may be bulletined about as follows: Never talk shop within earshot of strangers, for it is not in good taste to publicly parade your calling, or to habitually converse in a manner unintelligible to your listeners, for the reason that exaggerated eulogies of yourself or of anybody else are sure to call forth detracting observations that you would blush to hear. If you must talk in public places, and can do so intelligently, let your topic be chosen upon subjects of public interest. If you must "talk shop," of all places on earth, let a street car or a restaurant hold you silent.

CHICAGO, Feb. 22, 1881.

INEWRI.

#### Boston Notes.

To the Editor of The Operator:

SIR: From this point (the old State House) the bulk of Boston's commercial business is transacted. All the railroad agencies, shipping, banking and brokerage business, is sent from this office. Business at this time is enormous, and larger than ever before. Business is transacted here with the greatest dispatch and lightning-like rapidity, and could not be improved upon, or even equaled by any changes. No. 109 State street, the Western Union general office, is not so centrally located; hence the old State House has become the principal telegraph office, and the great telegraph centre of Boston. This bustling scene of activity is presided over by the courteous and popular Tom Calahan, a brother of the celebrated electrician and inventor, E. A. Calahan. John McGrath, "handsome John," is the principal cashier and accountant. He is assisted by several juveniles to receive business from customers. Mr. Marcy attends to the Boston Stock exchange, which is an adjunct of this office, and whence there are direct New York wires. Dwyer and Donovan manipulate the New York stock wires, with Waldo as relief. Lenhart is on the New York City quad. Mr. Devereux has charge of the branch offices and all are under the liberal and magnanimous Mr. Milliken, the manager of all the W. U. offices in Boston.

The American District and Gold and Stock also have offices adjoining the Western Union in the old State House, and Suel Smith, the genial old-timer, has general charge, making his headquarters here.

SARA B.

BOSTON, Feb. 21, 1881.

#### THE TELEGRAPH OPERATOR.

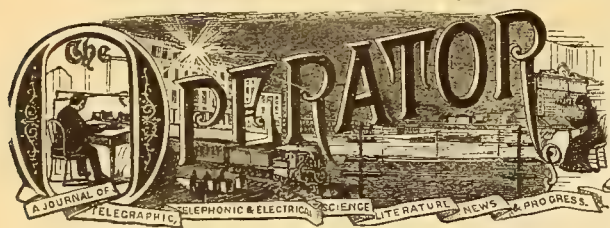
She sits within her narrow cell,  
A jewel worth a fairer setting.  
And I—I linger for a spell,  
My urgent telegram forgetting.

I love the sounder's cheery call,  
I love to watch the dimples playing  
About her fingers, white and small—  
I wonder what that hand is saying.

I love to dream of other years,  
Of blessings that perhaps await her,  
Of sweet eyes never dimmed by tears;  
I love—I love the operator!

—Jacob F. Henrici, in *Scribner's Monthly*.





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### SUBTERRANEAN LINES.

Since the recent storm in London, and the ensuing interruption to telegraphic communication, which seems to have been felt so keenly by the British public, the English newspapers have been calling upon the Postmaster General to place the wires underground. That system has been measurably satisfactory in Germany, where there are now eight thousand miles of underground wires, and it would not be a bad idea to commend the German system to the attention of the managers of the new Western Union.

It is the opinion of many telegraph engineers that overhead wires are best for all working purposes, when strongly built and properly attended to, but they are certainly more expensive to the companies in the long run. In this respect, Mr. Siemens has recently written that, on all the 8,000 miles of underground wires in Germany, some of which have been down for five years, no expenditure whatever has been incurred for repairs in that time, and, "judging by the perfect condition of the cables, it is not likely that any repair will be required for many years to come." It is thus to be seen that the interests of the companies, from an economical point of view, lie in a perfect system of underground wires. It is, therefore, to be inferred that the various telegraph companies will lose no time in burying their lines; especially since the telegraph, telephone and electric light wires are increasing so rapidly in the larger cities.

But we certainly consider it a hardship that legislation should be invoked to compel the companies to place their wires underground before they are quite ready to do so, or have decided upon a plan suitable to the exigencies of the occasion. The English system is recklessly expensive and far from perfect; indeed, it is not too much to say that there is not now in existence any system of underground telegraphy which can be called perfect. The telegraph has done, and is doing, a vast amount of good, and no hasty legislative action should be taken to impede its progress. The passage of a law to compel the placing of all wires underground would only have the effect of decreasing the number of wires worked; and, consequently, such a law would stand in the way of the growth and development of the telegraph business.

We see no reason why the wires should not be run overhead, since there is plenty of room up there, if the ample space were properly utilized, to accommodate all the wires which we shall

need for many years to come. Line building might be under the superintendence of some municipal bureau, to which plans and specifications would be submitted prior to the building of a line, and which should insist upon a scientific arrangement of the wires, and upon all poles, fixtures on buildings, etc., being built in a substantial manner. But, whatever justification may be offered for a law compelling the companies to adopt the subterranean system, it is certainly an unwise act to compel every individual who wishes to connect his factory with his office, or his office with his residence, to place the wire underground.

Underground telegraphy is sure to come in the future, but meddlesome and oppressive legislation on the subject will only limit the usefulness and impede the progress of the telegraph. If we are to have a successful competition, the struggling young companies must have some freedom in extending their system.

WITHOUT referring specially to the present gigantic telegraph monopoly, it might be well for deep thinking people to inquire just how far the Congress or local Legislature of a country which boasts of freedom can go toward suppressing trade combinations without setting a woefully bad precedent. We have no love for a monopoly, yet in the interest of fair play it might be pertinent to ask whether or not the holding of "exclusive privileges" acquired in the regular ebb and flow of trade is wrong. If so, where is the incentive for an individual tradesman or a corporate body to toil for 25 or 30 years to obtain at great sacrifice valuable contracts with kindred tradesmen or corporate bodies? Is it wrong for a tradesman to acquire, by purchase or invention, "exclusive privileges" under particular patents; such as, for instance, the Western Union's claim to the quadruplex, Page patent, etc.? If a citizen of one State doing business in another wants to surrender his shop, good-will and custom, close up and go home, how can the Legislature of that State compel him to return thither and open up and transact a business which he has abandoned as distasteful or unprofitable to him? In the case of two rival steamboat lines, where the traffic is found insufficient to pay them, must they, under the law, keep on running at a loss until both are financially ruined? Or, if one of those corporations wisely determines to save the remnant of its original capital by withdrawing from the contest and placing the money thus rescued in some better paying business, must it, under the law, burn or sink the steamboats for which it has no further use; or may it not sell them to its conquering rival—the only party who could possibly have any use for them? Then it would be interesting to ascertain to what extent the laws of a free country can prevent an independent citizen from selling his own property, anyhow, when he feels like it. If it is settled in law that one of two competing companies cannot sell to its rival the property which would be utterly useless to any one else, it would be still more interesting to learn if the law would permit a third party to step in and buy the property of both. If a hitherto disinterested party can legally buy from one he can buy from the other, and the double purchase would form a monopoly equally as offensive as the one formed by consolidation. Finally, if for a shrewd, even a grasping, tradesman to profit by the natural results of his superior tact, talent and enterprise be declared wrong, is it not more consistent with wise and free doctrines to leave the matter to

be settled by his patrons rather than to call in the police? But, whether coercive measures against the monopoly are right or wrong, it is certainly a dangerous experiment for presumably leading citizens to teach, as was the case at Cooper Institute the other night, those who may be of a Communistic turn of mind to sing such a song as, "We'll hang Jay Gould (in effigy) on a sour apple tree." That, certainly, is playing with fire.

A CORRESPONDENT from Rio de Janeiro writes to *THE OPERATOR*, requesting to be informed "How it is that on a cable that is working badly the signals become suddenly very large, and last for a week or two, then the cable breaks?"

In the absence of any data concerning the length, construction and method of operation of the cable, which data our correspondent has unfortunately omitted to forward, we are necessarily left, to a great extent, where Moses was when the light went out, *i. e.*, "in the dark;" and consequently can but put forward as an hypothesis the following explanation:

In a cable of any great length there is considerable retardation from static induction. That is, the cable acts like a Leyden jar. A large portion of the current sent into it at the sending end is retained by the capacity of the cable, only a portion of it arriving at the distant point, and this showing more plainly the *better* the cable is insulated. We will suppose the cable in question to be perfectly insulated, the retardation being correspondingly apparent. It is well known that one of the methods adopted to obviate this retardation is to attach a wire from the conductor to the earth, through a resistance so great as to interfere but little with the signals.

We may, therefore, assume the cable which has been working hard now to commence leaking at various points through the insulation. It being thereby put in connection with the earth, is enabled to discharge quickly, and the leakage, not being sufficiently great to abstract much of the current, the signals at the receiving end, being relieved of the retardation, come out strong and sharp.

This condition of affairs continues for some time; but a leaky insulation once commenced does not ordinarily cease, and the defective insulation increases until, finally, the water reaches the conductor at the same leaks at which the electricity escapes, and, in conjunction with the galvanic actions of the current, eats the conductor first to a needle point, and at last in two, when continuity is, of course at an end.

WHATEVER charitable people may think of the crazy, notoriety-seeking young persons who get "married" by telegraph, every religious sect owes it to its own reputation to discountenance the "clergyman" who takes part in such a circus. We hoped that the silly practice had been abated, but, judging from later reports, the fools are not all dead yet. There can be no more binding partnership than that of man and wife, and there is certainly no less binding manner of making a contract than by telegraphing the terms and acceptance. There is in all the list of the miseries and heartburnings of mankind no hermit so lonesome, no victim so utterly defenseless, as a discarded wife whose claim to recognition is doubtful in law. The old style of marrying, in the presence of *all* the parties interested, is prosaic; but while the new telegraphic style affords a certain amount of amuse-



ment to the idle spectators in two towns, its most enlivening qualities lie in its awful possibilities. There is, of course, excuse for young and thoughtless people, but the Church should be the bulwark against which the tide of irreverence and idiotic novelties should roll in vain. There is no law to prevent certain crack-brained people from imposing upon themselves new agonies and prospective sorrows, by raveling the legal technicalities and entanglements which already afford so much work to our divorce courts; but it is disheartening to discover the fact that such people can always find some sacerdotal pettifogger willing thus to trifle with his sacred office. Should it become necessary, in years to come, for this Friar Tuck of Dakota Territory to swear in court that he married this particular couple—neither of whom, of course, he ever saw—his testimony would not be worth a red cent. We might also, for the sake of truth, say the same of his sense of dignity.

BY the death of Congressman Fernando Wood the telegraph lost one of its earliest friends. The first efforts of Mr. Wood in Congress were devoted to the success of the application to give the aid of the Government in showing the practicability of the transmission of intelligence by magnetic or electric telegraph. Until the year 1842 no such proposition had been made; indeed, Professor Morse himself had not until then reached that degree of confidence in its feasibility as to venture upon an extensive application of it for useful purposes. When Professor Morse made his application to Congress for an appropriation sufficient to lay wires along the sleepers of the railroad track between Washington and Baltimore, and Congress and the public generally were evidently averse to the scheme, it was Fernando Wood who was most active in bringing converts over to the new idea. At his instance Professor Morse placed a battery in the room of the Committee on Naval Affairs, of which Mr. Wood was a member, and connecting it by wire with another battery in the committee room of Naval Affairs in the Senate, showed, by the transmission of communications from one to the other, that the plan was sufficiently feasible to warrant an appropriation, if only as an experiment. Morse, as is well known, became almost discouraged; but by the youthful energy and enthusiasm of Fernando Wood, aided by Charles G. Ferris, then a member from New York, the bill was finally carried though, the money appropriated, and Morse made the Superintendent at a salary of \$2,500 per annum. Professor Morse never ceased to recognize the great obligations which he and the world at large were under to Fernando Wood for his early appreciation and active support of the telegraph.

WE are gratified to notice that subscriptions to the Boyce Fund are flowing in steadily, but there are still some particular sections from which we should be glad to hear. The thrifty and provident person should be commended, but this is a case where no purely economical reason should stand in the way. The Boyce claim is an equitable one, and each member of the Telegraphers' Mutual Benefit Association should take a personal pride in seeing it paid to the last farthing. The officers of the Association are right in vigilantly watching its interests, but when it comes down to being thoroughly mean and stingy with the helpless widow and orphan, the Association stands sadly in its own light. In this way confidence is forfeited, and that fact is best exemplified in the gingerly manner in which level-headed men look

askance at that "Second Division." Let us have the unfortunate victims of the First Division settled with before we commence another branch of the concern.

WHATEVER may be thought of the merits or demerits of the telegraph consolidation, there is no doubt of the popular antipathy toward it, and the universal demand for full and free opposition. But our law-makers cannot give us fiat telegraph companies in the same free and easy, off-hand way that they give us fiat money, any more than they can compel a company to do business after its managers have declared it unprofitable or distasteful to them. We want solid sense in this matter, and if the Statesman is going to give us relief he had better abandon useless talk, plank up the money and let us get to work on new lines. Then we want honest and experienced managers, a remunerative tariff and fair living salaries for the employes. We have no use for lawyers.

It was quite amusing, last week, to see some of our non-reading telegraphers skirmishing around for a copy of THE OPERATOR, and unable to get one for love or money. It is becoming more generally understood that a man must read to keep abreast of the times, and that if he doesn't read he is morally sure to be "left" on the home-stretch. The man who buys his paper regularly and reads it attentively knows, at least, what is going on, even if he can't boss the job. He who fails to familiarize himself with the details of his work, and the governing spirit of the workers, incapacitates himself for that advancement which comes sooner or later to every wide-awake, zealous worker.

OUR esteemed contemporary, the *Evening Post*, in describing editorially the panic of Black Friday, revives the ridiculous fallacy, which has been so often exploded, that, during the excitement, "it was, in fact, in evidence that instances occurred when the wires melted, or burned off, in the efforts of the operators to keep up with the news!" Yet this is the average style in which the Metropolitan papers discuss the telegraphic situation. The rural papers have just commenced to expatiate upon the iniquities of William H. Gould, Hamilton McK. Eckert, Jay Green, General T. T. Twombly and Dr. Norvin Vanderbilt.

As an indication of the great earning capacity of lines of telegraph, it is worthy of note that Dr. Norvin Green, in a recent affidavit, says that since July, 1866, the Western Union Company has expended, over and above dividends to its stockholders, surplus earnings to the full amount of \$16,939,003.55. This vast sum was expended for the construction of new lines, erection of additional wires, for letters patent, for the purchase of other telegraph lines and the stocks of other telegraph companies, real estate and supplies and material.

In addition to their full page advertisement of the steel lever key in last issue, giving testimonials from many of the best known telegraphers in the business, Messrs. J. H. Bunnell & Co. today take another page in which to bring to the attention of telegraphers their Morse Learners' Apparatus and other standard telegraphic and electrical instruments and supplies. This firm does a large business in these goods, and its reputation among telegraphers and the trade is not excelled by any house that we know of.

EVERYONE has heard of "Deaf Hoffman" receiving by sound, and we have had many other prodigies in our ranks from time to time, but by far the most marvellous of all is Philip O'Connor, of this State, who, being without arms, sends either with his mouth or toes, and "transmits messages with wonderful skill and speed." There is, or was, in Binghamton, N. Y., an operator named Patrick Shea, who, having lost both arms in a railroad accident, performed all his duties as operator by the aid of cork substitutes.

THE publication, in our last issue, of the engraving of General Eckert took the place of our regular monthly addition to Our National Portrait Gallery, which should otherwise have appeared to-day. Consequently we have been compelled to postpone the regular contribution of our album until the first of next month, when the chosen subject—a popular and worthy representative of New England—will give satisfaction to all.

THE inauguration of an electrical society in this city is a subject well worthy of the attention of every telegrapher. For the encouragement of electrical science and stimulating the professional mind to search for new truths, such an institution as this is a much needed benefit to the telegraphers and the telegraphs of this vicinity. Under the guidance of the able President, Mr. F. W. Jones, the new society should rapidly become eminently successful.

SOME of the city papers are complaining of the charges made by the telephone company in New York. In Ohio a bill has been introduced in the Legislature forbidding telephone companies in cities of the first and second class to charge more than \$2 a month rent for any instrument. Of course such a bill will never pass through a body of fair-minded men, but it serves to show the temper of the public, and our telephone people might be guided accordingly.

MR. FRANK W. JONES, who has been chosen president of the New York Electrical Society, is excellently qualified for the position. His experience with the Chicago society will be of great service now, and his extensive knowledge and undoubted executive ability will go far toward establishing and popularizing the infant organization.

THE engraving of Gen. Eckert, in our last issue, and the letter-press have been freely commented upon as being equal to anything appearing in *Harper's Weekly* or any of the magazines. We have modestly given all the credit to the perfection which American workmanship has reached.

In referring, in our last issue, to the record of fast sending, we should have said that Mr. E. M. Shape, of Milwaukee, sent 2,631 words in one hour, instead of Mr. E. M. Sharpe, of Cleveland.

WESTERN UNION stock is quoted at 110 American Union at 67½, and A. & P. at 44. Last issue they were 111½, 79½ and 46½, respectively.

Now, if Mr. Edison would get Mr. Jay Gould to consolidate with his electric light it might be brought from obscurity.

THE consolidated Western Union Company has now over 300,000 miles of wire and over 10,000 offices.



## TELEPHONE DEPARTMENT.

They had a parrot talking through a telephone in Louisville the other day.

Paris is to have an addition to its telephone lines which will complete the circle of communication.

From Egypt it is reported that the Ministerial consent has just been given to a telephonic exchange for Cairo.

Lowell, Mass., may be called the "telephone city," for it is connected by telephone with over one hundred cities and towns in the States of Massachusetts, New Hampshire and Rhode Island.

A bill has been introduced in the Ohio Legislature, forbidding telephone companies in cities of the first and second class to charge more than \$2 a month rent for any instrument, and making companies which violate this schedule liable to an action for debt, to pay the aggrieved person not less than \$300 nor more than \$500.

The Telephone Department of New Zealand having procured a supply of Edison-Bell telephones, state that they are prepared, if sufficient applications are received, to establish the telephone exchange system in Wellington, the annual charge for which will be £17 10s.—*Electrician*.

We last issue gave a list of telephone companies not frequently heard of, and added that against some of them the American Bell Company had commenced suits for infringement. The Law Telegraph Company, of this city, writes to say that it is not one of the companies of questionable standing, as it uses only the Bell telephones.

It may not be generally known that conversation can be carried on through the human body. Try it by disconnecting one of the main wires from the top of a call bell. Let some person take hold of this wire while half a dozen others clasp hands, the last one laying his finger on the bell where the wire was taken from, and you will find you can talk very well through the six persons.

A telephone exchange manager writes: "A subscriber's circuit for several days was all right during the day, but about seven o'clock in the evening it would grow very weak, showing great resistance interposed. The cause was traced to the earth connection at the gas pipe near the ceiling over the chandelier. When the gas was burning the heat expanded the spirals of copper wire, thus making the connection an imperfect one."

At Kokomo, Ind., Feb. 11, as a part of an entertainment at the opera-house, music was transmitted by telephone from Indianapolis, 55 miles distant, and delivered to the audience from a single pony crown receiver, to which a tin horn three feet in length was attached. It had been raining along the entire line, yet cornet, French harp and vocal solos were heard over the entire hall, to the agreeable surprise of those having the entertainment in charge.

The telephone companies have sent in their bills to their subscribers for January. This is impudence itself. On Jan. 15 a storm occurred, which prostrated the telephone lines in every portion of the city, and in most cases the lines are not in operation yet. The companies have no right whatever to demand pay in the absence of service performed, and let us trust subscribers will make them so understand it, for their charges are excessive, anyway.—*N. Y. Truth*.

The Boston & Northern Telephone Company, with a capital of \$500,000, comprises the exchanges of Salem, Haverhill, Lawrence, Newburyport and Gloucester and owns and controls lines as far north as Manchester, N. H., and eastward to Portsmouth. The company has also bought of the Portsmouth Bell Telephone Company all of Rockingham County, N. H., business, consisting of the exchanges of Exeter, Dover, Great Falls and Portsmouth as well as the Lynn (Mass.) exchange of the American Bell Telephone Company, of Boston. The B. & N. Company now has five trunk lines to Boston, and intends running more in the spring.

Since the adoption of the new system of calls by members at the telephone office at Portland, Me., many mistakes have occurred on account of

wrong connections, and some have resulted in amusing conversations. Recently the telephone bell in a prominent business house rang and the proprietor proceeded to attend to the summons. A female voice was heard, and the following questions and answers ensued: "Hello!" "Yes." "What time are you coming home to supper tonight?" "Why, I've been to supper." "I'd just like to know whom you took supper with." "Why, with my wife of course." "How many wives have you, anyway?" "Look here, whom do you think you are talking with?" "With my husband, Mr. ———." "Not much, you are talking to Mr. ———." Upon this the gentleman heard a scream which appeared to be echoed by a number of other ladies in the same room.

The Patent Office, after careful hearing, has granted to Mr. E. Berliner a reissue of his original telephone patent, of January 15, 1878, with several new claims, among which is one that virtually awards to the above author the priority of invention and use of the local battery in conjunction with telephone instruments. Prior to the invention of Mr. Berliner it was necessary to yell very loud in order to make anybody hear at any considerable distance through the telephone, and even then the speaker's voice was heard quite faintly; but now, with this improvement added, the telephone is rendered so sensitive that conversation in whispers may be readily carried on, and the ordinary tones of conversation are delivered by the instrument in the most perfect and admirable manner. Mr. Berliner is entitled to the highest honor for his remarkable invention, which is now used in all parts of the world. The patent is held by the American Bell Telephone Company, of Boston, Mass.—*Scientific American*.

## DASHES HERE AND THERE.

They are now talking of attaching electric lights to buoys in harbors and off the coast.

On the 12th of March, 1790, Professor Daniell was born. His name is familiar to every electrician.

"Let's consolidate" is what the bashful telegrapher now says to his girl, and she replies, "We Union."

The Edison Electric Light Company of Detroit was organized in that city on the 15th ult., with a capital of \$500,000.

A recent fatal accident on the North Pennsylvania Railroad, near Quakerstown, Penna., was caused by the omission of one word from a telegraph dispatch.

The Chicago *Inter-Ocean* has leased a wire for a term of years from Washington to Chicago, and now handles its own dispatches with its own wire and operators.

The severe weather experienced in Prussia has delayed the completion of the Siemens-Halskie electric railway at Berlin. It was expected to be open for traffic at the beginning of last month.

A bill has been introduced in the Senate of Pennsylvania requiring the original copies of telegraph messages to be retained for three years, and to be produced in evidence in court when required.

A committee of Congress has reported in favor of accepting the proposition of the Northern Electric Light Company to light the Capitol and adjacent grounds, and the matter has been referred to the Appropriation Committee for further investigation and action.

The International Exhibition of Electricity, which is to open in Paris in August next, is already an assured success. During the past two weeks the government of Germany has given its adherence to the plan. The exhibition will be held at the Palais de l'Industrie, which is lent by the French Government for the purpose.

An Indianapolis superintendent recently sent word to an operator at a distant station to mend the break there. "Can't go out; storm is too bad," was the answer. "Storm or no storm, fix the thing!" "Hain't any ladder." "Go out and climb the pole." "Can't climb." "Why can't you climb a pole?" "I'm a woman."

The telegraph office of Neustadt, near Vienna, has had a narrow escape. It appears that a meteoric stone fell in the road before the door with a terrific noise, and accompanied by a brilliant

flash of lightning. The stone, which was afterward exhumed from the hole it had made in the road, was weighed in the presence of scientific men, and found to be 375 grammes in weight. It was covered with metallic incrustations.

Assessment notices (No. 139, assessment \$1) have been issued by the Telegraphers' M. B. Association, to meet the claims of the heirs of the late J. Oscar Belmore, of West Las Animas, Cal.; Patrick Callahan, of Bloomfield, Ind., and Wm. J. H. Bok, of Brooklyn, N. Y. Assessment No. 2, (\$1) in the second division has also been issued in behalf of the heirs of Wm. J. H. Bok.

An advertisement will be found in this issue of the Blanchard Food Cure Company. This company makes a specialty of supplying foods of various kinds, adapted to serve directly as curative agents, and its success has been simply marvellous, as will be seen by a visit to the company's place at No. 27 Union Square, this city. Circulars, explaining the aim and object of the company, will be mailed free.

The Cedar Tree Mining and Milling Company, whose property is situated in Pioneer District, Pinal County, Arizona, adjacent to the Telegraph Consolidated mine, was organized in this city Feb. 23 by the election of the following officers: William Williams, President; Vernon Seaman, Vice-President; Lindley F. Seaman, Secretary and Treasurer. The offices of the company are at No. 58 Broadway.

The lamps in the Capitol and the streets of Washington are to have, in the aggregate, not less than 2,500,000 candle power. When all is completed, if the method is successful and accomplishes all that is claimed for it, the Government is then to pay the company \$350,000. Nothing is to be paid in the event of failure. The cost of operating this system will be about \$60,000 per annum, a saving to the city of \$95,000.

A New Orleans man lately cabled to a friend in Cuba, "Send me one or two monkeys." The reply came back: "Shipped you 75; will send rest as soon as can be found." The telegram had gone: "Send me 102 monkeys." The balance of 27 have been countermanded. This throws 75 monkeys on the hands of the delinquent company, and they will, of course, be divided into thirds, in accordance with the general rule. This will allow 25 monkeys to the sending operator, 25 to the receiver and 25 to the company.

Notwithstanding the unprecedented length and severity of the storm, telegraphic communication with the large centres has been well maintained, and in some instances at a high speed. For example, one day last week more than 2,000 messages passed over a single wire between London and the north of England in nine hours, a fact which, considering the state of the weather and the exceptional length of telegrams in this country, has probably never been equaled in any other.—*Electrician*.

A dispatch from Denver, Col., on the 18th ult., says: "The City Council last night accepted the proposition of C. C. Ruthraaf and others for lighting the entire city with the Brush electric light for two years at \$14,000 per annum. The light to be furnished is guaranteed to be four times greater in the aggregate than could be furnished by the same number of gas lamps. The city is to have a thirty days' trial of the light before its final acceptance."

February 16th, in this city, articles of incorporation were filed for a new Electric Indicator Manufacturing Company. The object of the company is to manufacture a new district messenger call, a round nickel plated box about two and a half inches in diameter, around the inner edge of which are placed ten buttons on which are designated the calls, such as "Doctor," "Messenger," "Police," "Fire," "Carriage," "Coupé," and other "specials." The wire connects with an annunciator in the district office, where the call is shown on a large indicator with the number of the call-box, and remains exposed until the clerk attends to it.

The sixth annual meeting of the Canadian Telegraphers' Mutual Insurance Association was held at Montreal on the 18th of January. It was then reported that the whole fiscal year had passed without a death, and that the membership had steadily increased, showing a gain of 21 members over last year. There was a cash balance of \$661 on hand. The amount paid to the heirs of deceased members averages about



\$625, at a cost of only about \$4.50 per annum. The following officers were elected for the ensuing year: President, Charles Bourne; Vice-President, James Stephenson; Secretary-Treasurer, J. S. McConnell. Committee—A. Grant, C. R. Hosmer, B. J. Hickey, J. S. Mackenzie, H. P. Timmerman, J. Murray and W. J. Graham. Advisory Board—N. W. Bethune, T. C. Elwood, E. Pope, J. T. Townsend and D. Van Nostrand.

A dispatch from Ottawa, Ontario, dated Feb. 21, says that the Senate has amended the act to incorporate the European, American and Canadian Cable Company, limited, so as to restrict the rate to be charged to 50 cents per word on every message sent over the company's lines from the point where the message is received in Canada, as far west as Ontario, to any point in Great Britain and Ireland, or vice versa. Among those who have petitioned in favor of the bill is Lord Walter Campbell, the brother of the Governor-General. In the Senate, on Thursday last, an amendment proposing to strike out the clause restricting the rate for messages was rejected, and the bill was read a third time and passed.

A special cable dispatch from Paris says: Several successful experiments were made at the Palais Bourbon with an electric reporting machine, which it is proposed to introduce into the Chambers. The machine has the appearance of a small piano, and is played like that instrument by an operator on a keyboard of ten notes. Three notes are set apart for reporting foreign quotations. As fast as the orator speaks the operator touches the keyboard, on which each sound has a corresponding key. The machine instantly represents the sounds by conventional signs on a strip of paper. The signs have afterward to be translated. About two years are required for learning how to manipulate and make use of the instrument, which is the invention of an Italian named Mitchell.

## NEW YORK CITY ITEMS.

### Echoes from 195.

The "fly sender," Mr. Brandell, has inaugurated the "close crop" style of hair cutting, anticipating Operator Minier by a week.

Messrs. Gould, Eckert and Bates, accompanied by several friends, visited the general operating department last week and inspected the switch, tubes, etc.

Extra service is again in vogue and the boys are happy. Business is beginning to "boom," and the prospects are favorable for operators for awhile, at least.

Indications point toward a newly painted ceiling and general cleaning of the operating-room this spring. Masons are already at work patching up the falling plastering.

Mr. J. H. Dwight, the popular chief-at-large, had a slight paralytic shock on Sunday, which has rendered his right hand useless, though only temporarily, it is hoped.

The garb of mourning makes its appearance among the ladies in the city line department very frequently. Both Miss Fannie Crawford and Miss F. L. Dailey have very recently been called upon to mourn the loss of a father.

The Worcester, Mass., *Spy*, of Feb. 10, contained the following, which may interest the many friends of the gentleman named: One of the happiest social events of the season was the marriage of Miss Alice C., daughter of C. B. Eaton, at his residence last evening, to Fred N. Cooke, of New York; the happy couple will return to the city for a short visit in a few days.

The long and unexplained absence, coupled with a story of a body at the morgue resembling Mr. James Crate, led to a search being made for that gentleman. Two parties were dispatched from 197, one to visit the hospitals, the other the favorite resorts of "Jim." Dennis Brown succeeded in gleaned information that led Mr. Crate's many friends to rejoice that he was still in the land of the living.

### Other City Items.

The American District Telegraph office, corner Broadway and Park Place, was damaged by fire on Sunday to the extent of \$500.

A steamer in the middle of the East River set fire, recently, to a building on shore. The curious accident occurred in this way: The ice

caused the steamer to drag her anchor, which cut one of the river cables. The grounding of the wires heated things up so that the wooden cable-house on the Jersey side was set on fire.

The success and prosperity of the Mutual District Messenger Company seems to be pretty well assured. Two offices are already in operation, and, although less than a month old, the business transacted exceeds that of the same offices of the American District Company. The new company's office at 6th avenue and 46th street is conceded to be the prettiest and most attractive office ever fitted up for district purposes.

In order to permit the passage of telegraph wires over the big tenements and warehouses in the vicinity of the East River Bridge, on Franklin square, about a dozen workmen were engaged on the 14th ult. in raising a long and heavy pole at the corner of Pearl and Oak streets. They had got the big pole into an upright position in a deep excavation beside the smaller pole which it is to replace. Two men were sent aloft on the larger pole to tie it to the smaller one, when the loose earth underneath gave way. The two men jumped from their perilous position and landed on the tracks of the elevated railway. As they received only a few scratches in their thrilling leap for life, their escape is considered miraculous.

One of the ladies at "145" writes: "One day last week, our worthy chief being absent, a young and dashing fellow was sent up from the other end of the room to act in his place. He didn't seem to know how to take his sudden elevation, or rather didn't fully appreciate the height to which he was elevated, for toward noontime, after a noticeable silence of some moments, he stunned every one by saying: 'I have it!' When asked what he had, he replied: 'Can any one tell me why the Western Union Building is like the Hudson River? That's an original riddle.' Every one, of course, 'gave it up,' and his supreme moment was when he said: 'Cause it can't climb a tree!' If he wasn't 'elevated' back into the room from whence he came, 'twas only because the Manager was seen approaching."

THE CONTINENTAL LINE.—The Continental Telegraph Co. is alive yet, consolidation not having reached us. Our general office, under the efficient management of Mr. J. G. Case, with Mr. M. S. Smith as assistant manager, is made pleasant for Mr. J. J. McAllister, chief, who keeps Messrs. D. F. Forbes, W. Perry, J. Murphy and Miss Nelson busy as regulars, with several extras on the 10 to 3 trick. Mr. W. McDonald looks after the "errors." Mr. John Hanson, the famous "7," is in charge of the delivery department.

At "Fx" we have Mr. Ed. Roemer; R. S. Smith, "O," presides over the Stock Exchange office, with the fast man, Silas Ling, and Thos. Morgan, late of A. & P. At "Cx" is Miss I. H. White, assisted by Adolph Bosse. At "Bx," Mr. F. A. Cloudman is manager, and L. W. Arwell, J. B. Place and J. M. Quill, operators, with Thos. J. Casey as clerk and way wire man. At "Fx," Henry Zollicoffer looks after the fish business. At "Nx," Mr. A. R. Reeves is manager, with Miss Flint to keep the dry goods wire clear.

THE OPERATOR is always found in these offices, nearly every man being a subscriber. Though not as yet included in the consolidation, our position as a separate company is somewhat obscured, but pay-day comes just as regular.

ERRATIC.

## PERSONALS.

Mr. Kettles, of Boston, has transferred his services to the New England Press Association.

Mr. J. D. Vanderbeek is operator for the W. U. Telegraph Co. and also the N. Y., L. E. & W. R. R., at Passaic, N. J.

Mr. Jas. W. Wilson has recently received the appointment of Manager, W. U. Telegraph Co., Terra Bonne, La., vice Chas. A. Wood, who has resigned the management to accept a better position North.

BOSTON.—The first annual ball and supper of the telegraph operators of the Eastern Railroad will be given Friday evening, March 18, at Monument Hall, Bunker Hill District, Boston. As this

is their initial entertainment, the boys are exerting themselves, and nothing will be left undone that will in any way contribute to make it a most enjoyable occasion. Representatives from State street and the different roads are cordially invited.

Mr. William C. Ellis, for the past four years in the Western Union office at Gardiner, Me., has resigned to accept a position in the banking house of Messrs. G. W. Ballou & Co., at Boston. His departure is greatly regretted by his many friends. For the present his place will be filled by Mr. James Cusick, ticket master and operator in the M. C. passenger depot, with Mr. Henry C. Bates to assist him.

On Thursday evening, Feb. 17, Mr. W. F. Fitzgerald, of the Albany, N. Y., W. U. Office, was married at Schenectady to Miss Annie L. Van Epps, of the latter place. There were upward of fifty relatives and friends present, among them several of the bridegroom's associates in the Albany office. Mr. Fitzgerald is a very popular young man, and received from his fellow operators a substantial token of their regard, in the shape of an elegant French bronze clock and several other individual presents. While the company were partaking of the marriage feast a number of congratulatory telegrams were received from his co-workers at Albany, which were read by the officiating minister, much to the amusement of the guests. Mr. F. believes in consolidation and starts off in his new sphere with the good wishes of a host of friends. His marriage adds to the already large majority of benedicts in the Albany office, which, rumor says, will be still further increased in the spring by two more.

IOWA AND NEBRASKA.—S. C. & P. RAILROAD.—Nebraska has had good sleighing ever since Dec. 20, and trains have been blocked by snow-drifts for two and three days at a time. Mr. M. C. Shields severed his connection with the S. C. & P. R. R. on Dec. 25, to accept the position of private secretary to Mr. Lincoln, of the St. P. & S. C. R. R., with headquarters at Sioux City, Ia. Mr. J. C. Mann, from Altoona, Pa., is now running trains on the Iowa division, while Mr. T. B. Seely, late of the Sioux City office, is train dispatcher on the Nebraska division. Mr. F. D. Kendall is agent and operator at Belle Creek, Nebraska. At Fremont we have Scott Bryan, with "Willie" as assistant. Bob Peyton is agent and operator at Hooper. George Foster is at Scribner; F. A. Harmon at West Point, and Harry A. La Barre at Wisner. The latter is a graduate from the L. V. R. R., at Pittston, Pa. Mr. Avery is at Stanton. At Norfolk Mr. Charles R. Stedman is agent, and Mr. T. E. Bird operator. Both are originally from New York State. Mr. H. D. Dodendorf, from the L. V. R. R., at Fairview, Pa., officiates at Battle Creek. Mr. Joy is at Burnett; P. E. Ritz at Oakdale, and A. P. Fleming agent and operator at Neligh, the end of the road.

## BORN.

WARD.—Feb. 13, 1881, to Mr. G. D. Ward, operator N. C. R. R., Calvert Station, Baltimore, a daughter.

ATKINSON.—Feb. 18, 1881, to Mr. George Atkinson, Manager, Aledo, Ill., a daughter.

FIELDING.—Feb. 14, 1881, to F. S. Fielding, operator, Firth, Neb., a daughter.

## MARRIED.

BARTO—HOLLAND.—At Pittston, Pa., Feb. 16, 1881, by Rev. Father Finnen, Mr. I. N. Barto, chief operator Western Union Telegraph Company at Scranton, Pa., to Miss Annie M. Holland, of Pittston.

FITZGERALD—VAN EPPS.—Feb. 17, 1881, at the residence of the bride's parents, Schenectady, N. Y., by Rev. Wm. E. Griffis, Mr. William F. Fitzgerald, of the W. U. office, Albany, N. Y., to Miss Annie L. Van Epps.

## DIED.

ETTINGER.—Feb. 21, at Harrisburg, Pa., Wm J. Ettinger, Sr., for the past twelve years W. U. lineman at that place, aged 46 years.



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### LATER WORKS JUST PUBLISHED.

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The American Popular Dictionary: A perfect Library of Reference in one Handy Volume. 510 pages; cloth . . .	1 00
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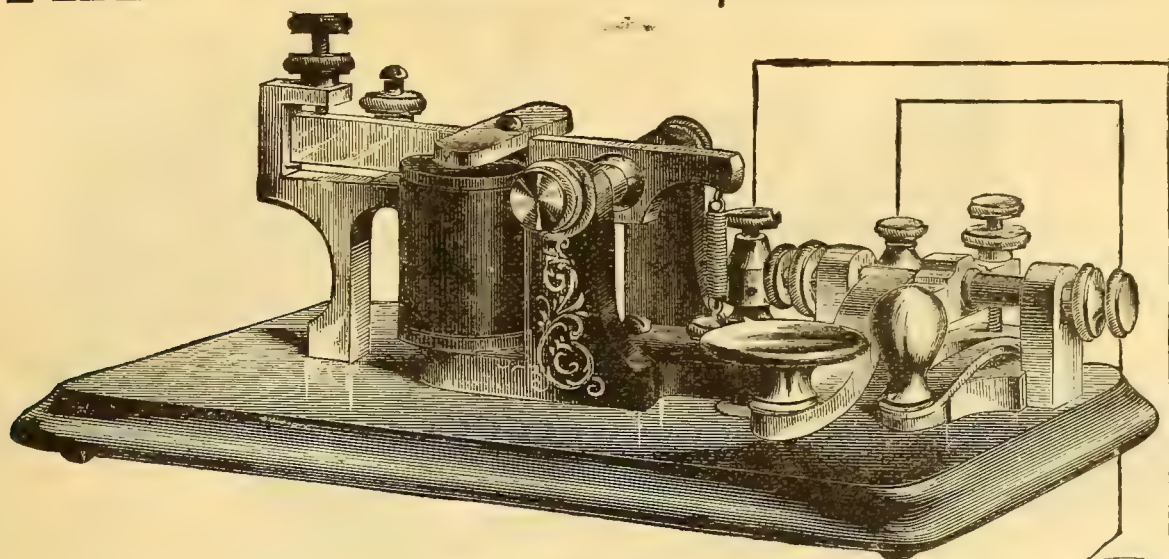
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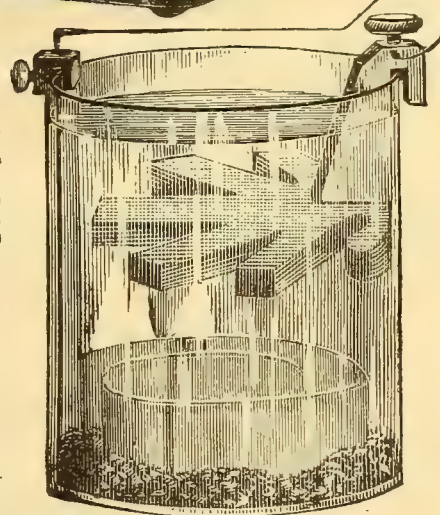
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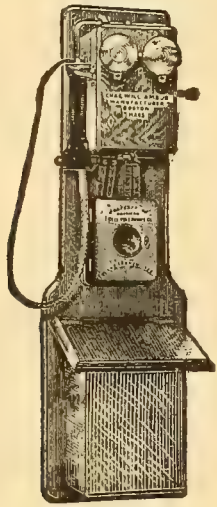


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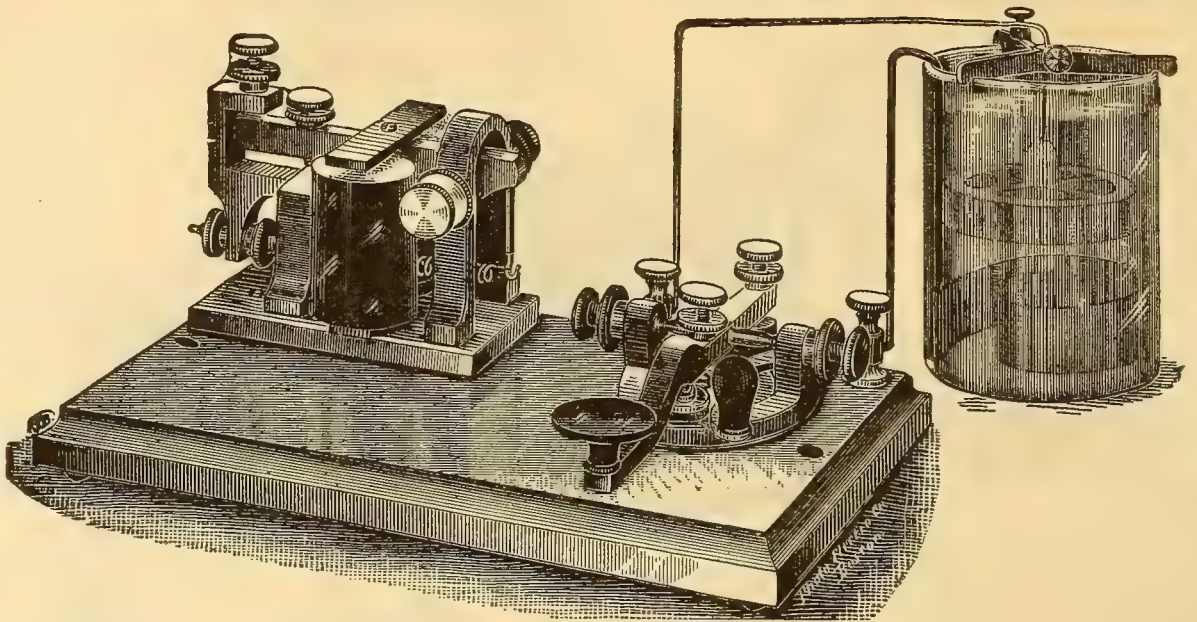
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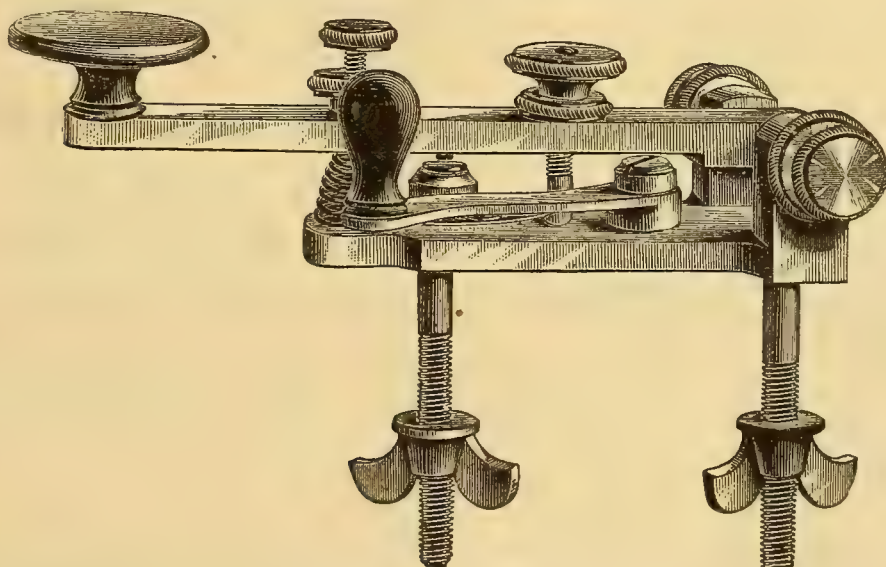
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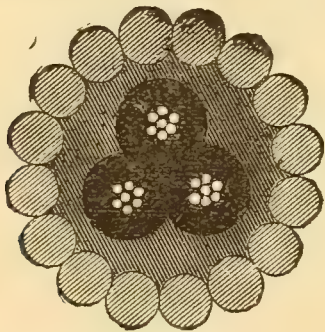
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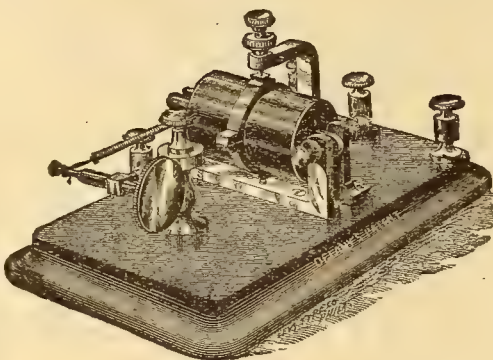
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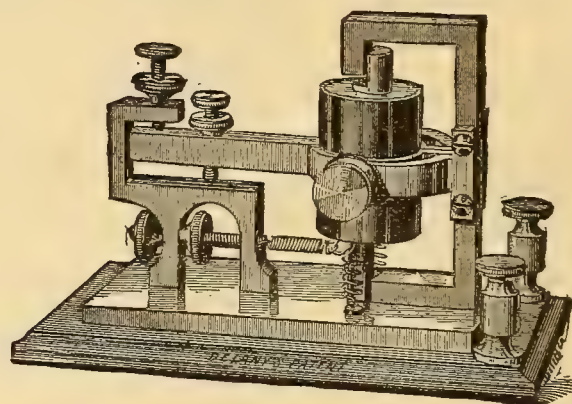
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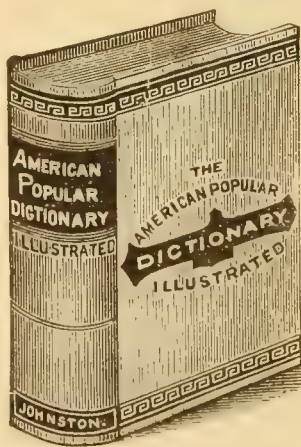
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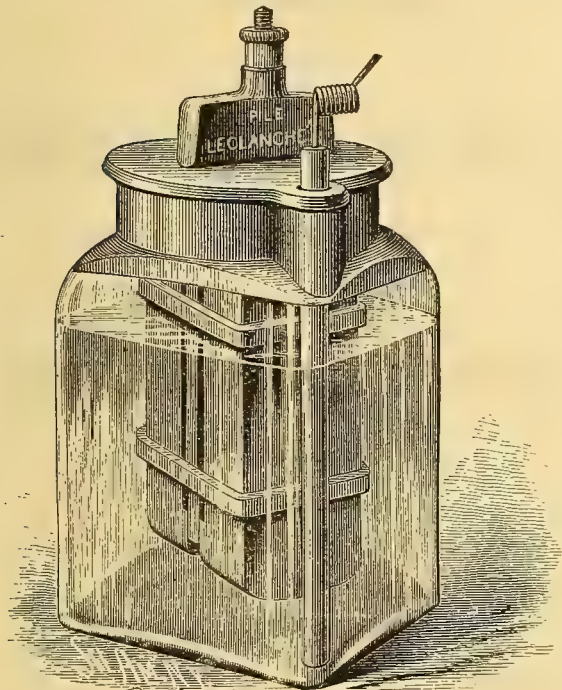
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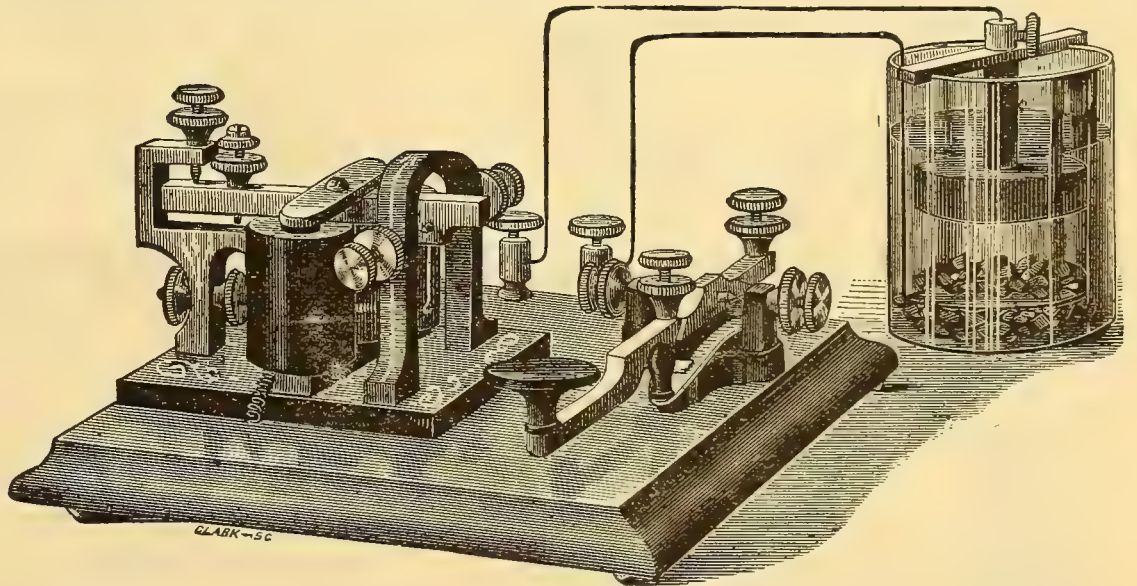
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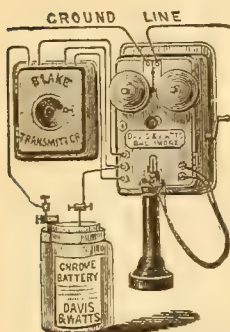
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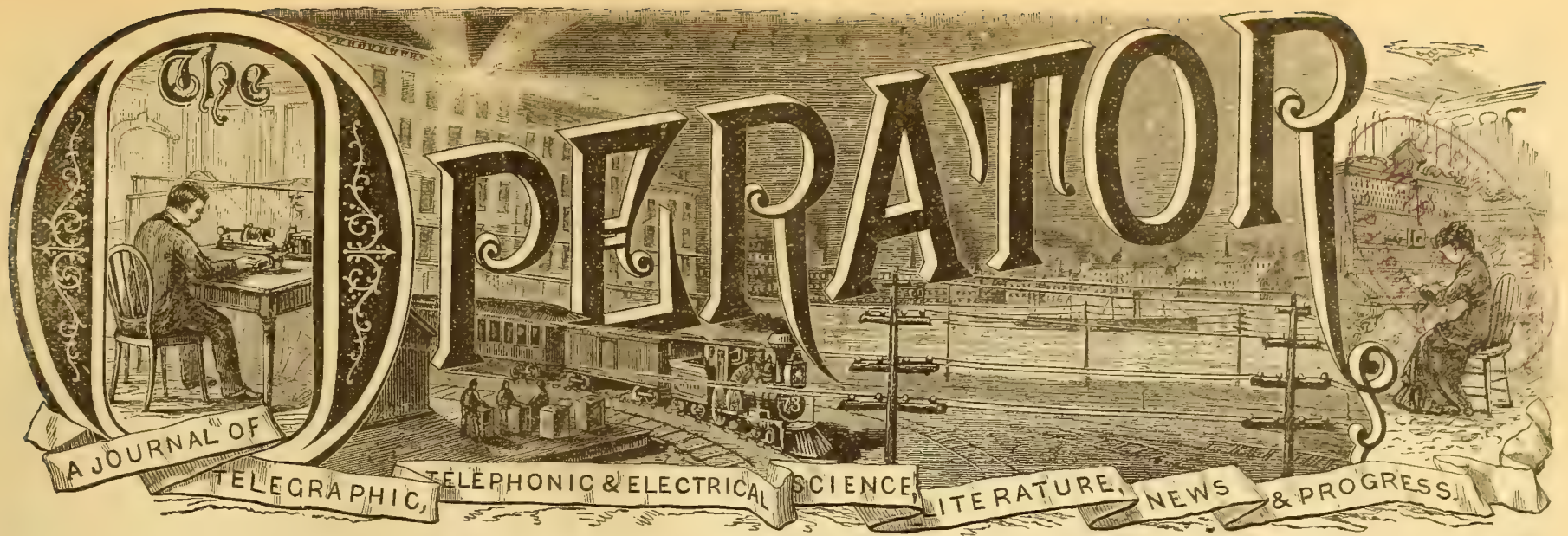
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VOL. XII.—No. 6.

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### The Consolidation Goes Sweeping on—The Cable Companies Nonsuited.

The readers of THE OPERATOR are already familiar with the fact that, on the 16th of February, the Direct United States Cable Company filed a bill against the Atlantic & Pacific Telegraph Company and other companies, praying for a perpetual injunction to restrain the consolidation. Judge Porter, in his argument, presented the case in this light:

The cable companies have gone into a pool, which is unlawful under the laws of the State of New York, and, at least, of doubtful legality in England; and they ask Your Honor to enforce, in our State, as a matter of comity in favor of one of the members of a pooling agreement, a contract which had been made with some of those members, and, as it turns out, for the benefit of the pooling company, and to the detriment of our own corporations, and in defiance of our own laws. Can there be any doubt that the pooling agreement was illegal? The cable companies have a monopoly; they have established it through the pool. That is a pool which, if they were organized under our laws, would subject them to indictment for a conspiracy, or to a revocation of their charter. A man is free to buy what he will. Messrs. A. T. Stewart & Co. may buy out Claflin & Co.; both may buy out any dozen firms that they please in the city of New York, and they may run all the stores. That is the monopoly of private property. But if Stewart & Co. and Claflin & Co. and these others, without purchase and without sale, enter into a combination, that is an unlawful combination. The cable companies have done that. What they did they did without authority of law, and it is against public policy. The Direct Cable Company is a member of the pool, and whether it does or does not transmit messages it receives a portion of the earnings of the pool. Plaintiffs' counsel say that the Atlantic & Pacific Company agreed to live for twenty years. It did not. The cable company took with knowledge that they might sell the next day the property right from under that agreement, under the act of 1870. There is no allegation of the insolvency of either company. They say if they recover a judgment they cannot collect it. Why, they were never in as good a condition to collect it. There never has been a time until its connection with the Western Union Telegraph Company when it made money at all; it was doing a losing business.

Argument was continued from time to time until the 1st inst., when Judge Blatchford reserved his decision until argument in the suit brought by the French Cable Company, asking for a similar injunction, should be concluded.

On the 3d inst. the court flatly refused to issue the injunctions asked for by the cable companies. An amended order was then presented by the complainant companies, but only to meet with a similar fate. The court also refused any postponements for the purpose of reviving litigation. The drift of Judge Blatchford's decision was contained in a single sentence, which said that "to compel the stockholders of the selling companies, when their sale is authorized by law, to forego the benefits of a sale valuable to them and to submit longer to the sacrifices and ex-

penses of a business less advantageous to them than the sale, is to put the power of a court of equity and the province of an injunction to uses which are not warranted by reason of a precedent."

In "the Williams suit" the case rather went the other way. This was a case where, as will be remembered by readers of THE OPERATOR, Mr. William S. Williams sued, in the Superior Court, the Western Union Telegraph Company and the Union Trust Company to enjoin the distribution of the scrip of the increased \$15,526,590 capital stock of the former company among the stockholders, and also to prevent the proposed purchase of the Atlantic & Pacific and the American Union Telegraph properties for \$23,000,000, Mr. Williams claiming that both together were worth only \$8,000,000. The application was originally made to Judge Truax, who, on February 12, granted a temporary injunction, and ordered an argument to be had to decide as to its being made perpetual. On the 28th ult., Chief Justice Sedgwick, before whom the last argument was had, granted an injunction preventing the proposed distribution of \$15,526,590 increased stock among the Western Union stockholders, at the same time holding that on the other question raised there was not sufficient evidence to warrant an injunction. The order was as follows:

It is ordered that the defendant, the Western Union Telegraph Company, and the individual defendants, its directors and officers and their and each of their employes, officers, agents, servants, attorneys and counsel, be and they are hereby restrained and commanded to refrain from issuing, transferring or dividing among the stockholders of the Western Union Telegraph Company any part of the sum, \$15,526,590, of the increased capital stock of the said Western Union Telegraph Company as provided in a certain contract made between the directors of said Western Union Telegraph Company and the American Union Telegraph Company and the Atlantic and Pacific Telegraph Company, or in any other manner, to said Western Union Telegraph Company during the pendency of said action or until the further order of the Court. And it is further ordered that the defendant, the Union Trust Company, its directors, officers, agents, servants, attorneys and counsel, refrain from issuing to the stockholders of said Western Union Telegraph Company any portion of said stock during the pendency of this action or until the further order of this Court. And it is further ordered that the motion made to continue the order of the Hon. C. J. Truax in other respects be denied.

Dr. Norvin Green, when questioned, said that this decision would not prevent the issue of stock for the purchase of the properties of the American Union and the Atlantic & Pacific companies, but only the equitable distribution of stock to the Western Union stockholders; that it would not change the situation, except so far as the Western Union stockholders are effected. The telegraph consolidation is a fixed fact, but

this decision may require that new means be devised to effect the equitable division of new stock among the Western Union stockholders, instead of those provided by the January agreement. He could not say what would be the next legal step which his company would take.

The Postal Telegraph scheme has not been heard from since our last issue, and seems to have been effectually shelved.

The "anti-monopolists" have apparently retired from the field, and, for the matter of that, we have heard very few expressions of regret. Mr. Vanderbilt was recently questioned on this particular point, and replied as follows:

"It is perfectly absurd—this cry of anti-monopoly. Agitators and demagogues always begin by attacking property; they know they cannot succeed unless they set up a popular cry which presents a false issue. The present mode of attack is to call all the great corporations monopolies, and the railroads are selected as the chief offenders. Now, as a matter of fact (and here Mr. Vanderbilt's voice grew almost vehement in its earnestness), the railroads have done more than all other agencies to develop the country; a larger percentage of the money invested in them has been sunk than in any other business, the capitalist who first embarked in the enterprise generally losing his money and the people getting the roads. Moreover, consider that never in the history of the country has there been so much railroad building in competition with old lines as there is to-day. A monopoly is simply impossible. There is too much money and enterprise in the country for that, and railroads are too easily duplicated."

It will thus be seen that the consolidation goes on, one way or the other, and if the public feels that it needs relief it must drop the anti-American plan of appealing to the State courts and the general government and, in lieu thereof, put its money in new lines and let us have a live opposition. The trade is free to all.

### Notes and Queries on Electricity and Electromagnetism and their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

BY T. D. LOCKWOOD.

Q. 94. What is thermo-electricity?

A. Thermo-electricity is the name given to that branch of the science of electricity which relates to the production of electric currents by the agency of heat. The term literally means heat-derived electricity.

Professor Seebeck, of Berlin, in 1823, discovered that if two bars of any two metals, especially bismuth and antimony be soldered together at one end, and have their other ends connected to one another by a wire, so as to form a complete circuit, on the application of heat to the point where the metals are soldered



a portion of the applied heat is absorbed and disappears, and an electric current is developed in its stead.

All metals, and many other conductors of electricity, are capable of producing thermo-electric currents, and they are all classed either as thermo-electro-positive or thermo-electro-negative bodies. The former class comprises those conductors in which the current proceeds from the colder to the warmer portion; and the latter includes those in which the current proceeds in the opposite direction.

Bismuth may be regarded as the representative of the former class, and antimony as that of the latter. In experiments in this science, therefore, these metals are most frequently used. For example: We take a bar of bismuth, and solder or braze one end of it to one end of a bar of antimony, then attach a galvanometer by wires to the free ends of the two bars, so that the circuit is completed from the bismuth to the antimony by soldering; then from the other end of the antimony to one terminal of the galvanometer, and from the other terminal of the galvanometer to the free end of the bismuth. If we then heat the junction of the two bars, we shall see the needle deflect, the current proceeding from the bismuth through the heated point to the antimony, thence through the galvanometer and back to the bismuth. Some metals when thus united are found to produce a current in one direction when the junction is moderately heated, but when the heat is increased, the direction of the current is reversed.

Q. 95. What is a thermo-electric battery?

A. When only one bar of each of the metals employed is used, the arrangement is called a thermo-electric pair. A number of these thermo-electric pairs may be joined in series, just as a number of voltaic cells are joined together for the formation of a voltaic battery.

When the pairs are so joined, the entire series is called a "thermo-electric battery," and its electromotive force is equal to the sum of the electromotive forces of all the pairs added together. To make such a battery, suppose we have six bars of bismuth and the same number of antimony, each bar being three inches long, three-quarters of an inch wide, and one-fourth of an inch thick. Arrange them alternately, so that if the first bar is bismuth the last will be antimony. The bars must then be soldered together at each end, the second, antimony, being, for instance, at one end soldered to the first bar and at the other end soldered to the third; the third, in its turn, having its other end soldered to the fourth, and so on. The two terminal bars will, of course, have one end unattached.

These free ends represent the poles of the battery. To set the battery in operation, all the junctions on one side must be heated, while all those on the other side must be kept cold. While the arrangement described represents the principle of the thermo-electric, there are many varieties, modifications and improvements. One of the first thermo batteries was invented by Melloni, in 1834. He made what he called a thermo-multiplier. It consisted of about fifty little bars of antimony and bismuth inclosed in a brass cylinder; the whole arrangement being but two and a half inches long, and about half an inch in diameter.

The terminal bars were connected by wires to a delicate galvanometer. This contrivance was so sensitive to slight changes in temperature that when the hand was brought near to one end of the instrument the current generated was sufficient to move the needle several degrees. Two of the most efficient thermo-electric batteries are those of Nöe, of Vienna, and Clamond, of Paris; the former being more speedily excited and giving a powerful current, and the latter being very strongly constructed. To sum up: A thermo-electric battery may be briefly defined as "an arrangement which transforms heat into electricity."

Q. 96. Has the thermo-electric battery ever been employed for practical purposes?

A. Yes; it has been applied to several purposes. Melloni, at a very early date, used the thermo-pile, previously described as having been constructed by him, to measure small differences in temperature. Clamond's battery has been quite extensively experimented with in England for working telegraph circuits. It was expected that the thermo-electric pile, in Clamond's improved form, would, on account of its low resistance, be useful as a universal battery—that is, one from which many circuits are worked; and at one time five thermo batteries were used to work no less than 90 separate circuits from the London post-office. Each of these circuits were less than 100 miles in length. All the thermo batteries, however, ultimately failed, by the burning out of the insulating material between the several layers of bars. This is probably not a fault which will prevent the thermo-pile from being eventually used.

But the most important application of the thermo-electric battery has hitherto been to furnish a current for the electro-deposition of metals, or, to use more familiar terms, for electro-plating. It was first so used in 1843 by Moses Poole, and patented, but did not then come into general use.

Thermo-electricity has, however, been more or less employed since that time for plating, and since the invention of Clamond, has done efficient work. Clamond's thermo-electric battery is now in use in various plating establishments in Birmingham, London and Sheffield, and it is said that a machine of one hundred bars, with a consumption of eight to nine feet of gas, deposits an ounce of silver per hour.

These batteries have experienced such important improvements of late years that it is believed they will soon be utilized with great advantage.

Q. 97. What is magneto-electricity?

A. It is the name given to electrical currents developed by the relative movements of magnets and wires. For example, if a magnet and a coil of insulated wire are caused to alternately approach and recede from each other rapidly, momentary currents are induced in the coil, which are alternately opposed to each other in direction. The process of developing magneto-electricity as already stated (see answer 12), is called magneto-electric induction.

It is one of Faraday's most important discoveries. While experimenting, in the year 1831, he ascertained that by inserting the end of a permanent magnet into the middle of a coil of wire to which no battery was attached, a current of electricity was produced, whose direction depended upon the pole of the magnet inserted and the direction in which the coil was wound. By inserting the other end of the magnet a current in the opposite direction was produced.

In the same year he produced a spark by pulling an armature (covered with a coil of insulated wire) from the poles of a magnet; and also obtained magneto-electric currents by rotating a copper plate between the poles of a magnet, and by sliding a coil of insulated copper wire upon a bar magnet. We see, therefore, that by the mere motion of a magnet in near proximity to a conductor, or of a conductor in the immediate vicinity of a magnet, without any battery, dynamic electricity may be produced. In the next year, 1832, the first magneto machine was invented, and electricity generated in this manner is now one of the most important agents in the useful arts, and is for many purposes to be preferred to that produced by voltaic batteries.

Q. 98. What are the principal applications of magneto-electricity?

A. It has been quite extensively applied in many ways too numerous to recapitulate. The following are, however, a few of its most important applications:

Magneto currents, generated by small machines are frequently used for medical purposes, and have also been much employed in the experimental room and laboratory for chemical and physiological reactions.

It is also almost universally used in the production of the electric light, and was first employed for that object by a Mr. Holmes, who showed a machine for the purpose in the International Exhibition of 1862, since which time, whenever the electric light has been used profitably, its currents have been generated by magneto machines.

For blasting, the explosion of mines and

submarine charges, it has proved a very valuable agent, Prof. Wheatstone having devised an ingenious apparatus for the exploding of fuses. It has the power of igniting from two to twenty-five fuses simultaneously.

The application of magneto-electricity to electro-plating was an event of importance in the history of that art. It was first so applied in 1842, and the machine then introduced was used for many years, but has now been superseded by newer and more improved arrangements, such as the Gramme or Siemens, and Alteneck machines.

Perhaps, however, the most important application of magneto-electricity is to telegraphy. Gauss and Weber, in 1833, moved their telegraph needle by magneto-electricity, which was the first employment of Faraday's discovery in such service.

Subsequently Steinheil, in 1837, and Wheatstone, in 1840, made great improvements in apparatus; and at the present time Wheatstone's alphabetical telegraph is almost exclusively employed on country lines in England, while the magneto-pointer telegraph of Siemens and Halske holds its own as a private line instrument in Russia and Germany. In our own country, the magneto-pointers of G. L. Anders are well and favorably known.

The magneto current has been more extensively employed during the last few years than ever before, owing to the extraordinary number of magneto bells manufactured and introduced as telephone signals. The telephone itself is also an important application of magneto-electricity, which will be more fully considered hereafter. Very lately magneto-electricity generated by dynamo-machines has by Stephen D. Field been applied as a continuous current to the closed circuit Morse wires of the Western Union Telegraph Company.

Q. 99. Has the magneto-electric system of developing electricity any advantages over the voltaic battery method? If so, describe some of them.

A. For some purposes it has decided advantages, some of which may be enumerated as follows:

On comparatively short telegraph lines, such as private and municipal telegraphs, it is far superior to the battery system, inasmuch as although the first cost of the machine is greater, there is practically no outlay for its management and maintenance, while the expense and annoyance inseparable from the maintenance of batteries are totally dispensed with.

It has also been ascertained in the practical working of magneto telegraphs that they will work satisfactorily over a heavy escape that renders a line worked by batteries totally inoperative.

In the production of the electric light, the magnet machine presents great advantages as compared to voltaic batteries, on the score of economy and convenience. It has also been the most valuable agent in bringing the cost of the light within reasonable limits.

The chief objection to the use of the electric light was formerly the enormous expense necessarily contingent on the continued use of large voltaic batteries, and the consumption of zinc and other materials essential to keep them in good working order.

The introduction of the magneto-machine, in 1862, by Mr. T. Holmes, and the wonderful improvements that have since been effected by Wilde, Siemens, Wheatstone, Ladd, Gramme, and others, has completely obviated this objection, and made the electric light an ordinary illuminator, known and valued by many, instead of being, as formerly, a cabinet curiosity, only within the grasp of the professional electrician.

These machines have also, with excellent results, been applied to electro-plating, and for that service are now being universally preferred to batteries, the same advantages being observed as in their application to lighting. The Gramme machine was first used for this purpose, and the first one made ran for five years without any repairs or outlay, except the cost of oil for lubrication.

But since the general introduction of the telephone, magneto-electricity may be said to have found its sphere. Merely mentioning the telephone itself, in which the magneto currents may be said to be involuntarily generated, it was early seen that some signal was necessary to at-



tract the attention of the distant telephone operator; and the application, in a branch circuit, of the magneto-electric generative apparatus, in combination with the special polarized armature invented by Thomas A. Watson, answered the purpose so admirably that it is still used substantially in the same manner as at first.

Many thousands of these bells are now in use, and will be fully described in their place. The use of the magneto bell for a signal has also the advantage of being able to ring over long or short lines indifferently, and in large offices the economy in maintenance, and the valuable space saved, which would otherwise be devoted to large batteries, is such a consideration as to render the magneto system the only one now regarded as worth a second thought.

### THE ASSOCIATED PRESS.

#### An Entertaining and Instructive Lecture by the Director-in-chief.

On Thursday evening last, the 10th inst., Mr. James W. Simonton, the General Agent of the New York Associated Press, delivered a lecture at the Academy of Music, Philadelphia, choosing a subject particularly interesting to all telegraphers, viz.: "The Associated Press, or How we Get our News." The Academy, which is the largest theatre on the continent, was well filled by a highly critical and cultured audience, many of the clergy, judges, professors from the University of Pennsylvania and the leading merchants being accommodated with seats on the stage. At a table to the left of the distinguished orator was a Morse instrument, and, at intervals during the evening, messages were exchanged between the audience and London, New Orleans, San Francisco, and Montreal. This part of the programme was superintended by Mr. W. H. C. Hargrave, the local agent of the Associated Press at Philadelphia, who is also a well-known and expert operator. Under his personal supervision, and with the aid of Mr. Frank W. Jones, of the Western Union; Mr. G. G. Ward, of the Direct Cable, Messrs. George Merrihew, and Thomas Dolan, night managers respectively at Philadelphia and New York, and other courteous officials, the circuit changes—Torbay at one time and San Francisco direct at another—were made with such rapidity as to astonish even experienced telegraphers, while the admirable working of these long circuits, one of them at least stretching over 3,400 miles, and duplexed, and the other half way to England, reflected the greatest credit on the telegraphic system of the country, and the skill and enterprise of its managers. Under this head we should not omit the name of Mr. Wilfred N. Gove, the operator, who handled his wires in his own inimitable style. With telegraphers Mr. Gove needs no commendation, and it is sufficient to say that the great success of that part of the lecture was due in no small measure to his usual coolness, discretion and well known ability as an operator.

The orator was introduced by Mr. William V. McKean, the editor of the Philadelphia *Ledger*, who spoke of him as "the greatest wire-puller of the age." Mr. Simonton at once, and with his usual vigor, struck into his theme, of which the following is a synopsis:

The name of the Associated Press is familiar, but of its character and purposes the general public is largely ignorant, and it is questionable whether there is any other subject, the telegraph itself excepted, so intimately connected with the everyday affairs of the people about which the people know so exceedingly little. Having traced the growth of the Associated Press from the year 1837, when the procurement of marine news in New York harbor led a number of journals in that city to combine, down to the present day, Mr. Simonton explained that the organization is practically a central news exchange, with branch associations for local purposes in various cities, all governed by the same object, of getting the

most and freshest news, while the cost of distribution is divided among all the members.

The mode in which the association, which is not an incorporated organization, is managed and operated was explained by the speaker, together with the territory covered by the branch associations, which collect the news within their respective territories and forward it to New York, whence it is redistributed all over the country among the 80 voting members and more than 100 customers not members. Having in this way shown how the co-operative business of exchanging news is carried on, Mr. Simonton described the manner in which the branch press associations are governed, showing that the associations in the large cities bear the brunt of the pecuniary burden.

The cable facilities were next spoken of. By this means, said the speaker, not only the news from the Old World is placed before readers every morning to read at their breakfast tables, but the comments of the papers of the Old World are also laid before the readers, as fresh as their breakfast rolls. A description of the method by which twenty-six copies of a report are made simultaneously by means of impression paper and the stylus, followed, together with the mode of distributing the reports to the papers. Mr. Simonton then said: "Ladies and gentlemen, I will now give you an illustration of how we get the news. I shall send from this spot several genuine messages to various cities, and give you the answers as soon as they are received. I have notified the operators at these points that I should be apt to call them about this time, and there will probably be but little delay."

Turning to Mr. Gove, Mr. Simonton said: "Call up New Orleans. Send McDaniel 'How are you? What is the news in New Orleans to-night?'" In two or three minutes the answer was clicked back, and read in full by the lecturer.

At five minutes to nine P. M. Mr. Simonton requested the operator to call up London and send the following message: "To Heuston, London. What is the news in your city? What is Parliament doing to-night?" In three minutes the answer was handed him, and after he read off news that had been flashed like thought under the ocean, the audience applauded very cordially. Mr. Simonton added that it had come by way of the Direct United States Cable.

While awaiting the reply to the dispatch from London, the speaker related several anecdotes illustrative of the blunders made in sending dispatches, and the relation of one of them drew out evidence of the fact that the audience was composed of people who keep the run of news. He was beginning to tell of an incident in which the mistake of a single letter caused the friends of a youthful bride and groom to be met solemnly on their arrival at the depot by friends with a hearse and carriage, instead of a horse and carriage. Mr. Simonton had got as far as "a young married couple on their bridal tour," when the house came down with a round of hearty applause, a delicate compliment to the speaker's recent marriage.

At six minutes after nine o'clock, San Francisco was called up, and across the continent was flashed the query: "Webster, San Francisco, 'What is going on in your place. Give us a dispatch, quick.'" In six minutes the replies were read, referring to the Kalloch case and to the success of the Moody and Sankey meetings. In this connection, the lecturer explained how the news as it was being sent was "dropped" at Chicago and other cities for the use of the press in those places.

The average cost to the members of the Associated Press for the news distributed to them was next spoken of, ranging from \$15 a week to some small struggling paper in the South to an average of \$300, and higher, per week, in the largest cities.

The charge that the Associated Press is a monopoly was taken by the speaker for a brief review and answer. He explained that there is no more combination between the telegraph company and the Associated Press than there is between the bank and its depositor. The association gets the lower rates that belong to large orders, but no advantage that cannot be obtained by any one else that will give the telegraph so much business. The speaker referred adversely to the demand for government telegraphy, after which Washington was called up. "Ask how the

weather is?" said Mr. Simonton. Almost instantly the answer came, "Moonlight, cool and pleasant."

Mr. Simonton then asked for a news dispatch from Washington, and while awaiting its transmission improved the opportunity to explain that the Associated Press is not a monopoly because it decides who shall and who shall not have the use of its news. "One man can photograph the rising sun," remarked the lecturer, "and there is no reason why a thousand may not do the same thing if they will get up early enough in the morning." (Laughter.) He decried as groundless and senseless the clamor against the Associated Press as a monopoly.

At this juncture there came an intelligent summary of the latest Washington news, from Mr. Walter P. Phillips, the agent at that city. When Mr. Simonton ordered the operator to ask Washington the time there was a general reference to timekeepers in the audience, and some were scarcely in hand when the operator announced "Nine twenty-two."

Mr. Simonton then spoke of the personnel of the Associated Press, paying a high tribute to their intelligence, culture and fidelity. He ridiculed the idea that Jay Gould or any other individuals could, even if they so desired, control the Associated Press. In conclusion, Mr. Simonton spoke of the blessing the association had proved itself as a mighty force in civilization, referred to the prodigious labors connected with the reception and handling of the news, and gracefully closed his lecture by introducing a picture of the weary news editor receiving from the Associated Press agents, about three o'clock in the morning, the mysterious telegraphic symbol "30"—the welcome sign that his weary task had ended for the day. He pictured the faithful operators passing on the welcome word, flashing over vast plains and through mountain glens, under the billows, from North, South, East and West, the good word that marks the end of another day of toil, and its simple meaning is, "GOOD NIGHT."

### Operators and Actors.

In the good old days of the American Telegraph Company, operators and actors were more closely allied than they are to-day. "Red tape" was comparatively unknown, and the word "telegraph" was a talisman which commanded the open sesame to any theatre.

The humblest tyro in telegraphy in those days could "D. H." a social message for a histrionic friend, and in return passes to witness tragedy, comedy or pantomime were always forthcoming.

Among others who have enacted upon the stage the dual professions of telegrapher and actor may be mentioned the late Robert Heller, magician. Mr. Heller found in electricity a valuable factor in the production of many of his wonderful and mysterious performances. Electricity was evidently employed in the "second sight" manifestations, and his remarkable thunder and lightning scenes could not have been performed without its aid.

In Dion Boucicault's "Long Strike," the telegraph office furnishes a scene which, if properly placed upon the stage, is quite as thrilling and sensational as could be devised.

J. Ed. Milliken, brother of Geo. F. Milliken, manager of the Western Union office at Boston, is an excellent stock actor, and has lately adopted the stage as a vocation. Mr. Milliken is admitted to be one of the best electricians in the Union. He is the inventor of the Milliken repeater, the Milliken spring jack switch, the Milliken compound wire and the quadruplex operating table, universally used by telegraph companies. He, however, has profited very little from these inventions, having neglected to take out patents. M. C. Milliken, a brother, is an organist and composer well known in New England.

Wm. Martin, receiver at the Western Union Boston office, has frequently appeared upon the



stage of the Boston Museum on benefit nights. Mr. Martin studied for the stage, and is a natural actor, as his friends can testify, but abandoned his chosen profession at the solicitation of a member of his family.

Mr. Martin's mother, Mrs. Sarah Martin, whose death at the age of 80 is recorded in the present issue of THE OPERATOR, was well known in musical circles half a century ago, under her maiden name of Bennett. At one time her services commanded a greater price than those of any other vocalist in Boston.

Wm. H. Fessenden, an operator, and until recently secretary to Assistant General Superintendent Chas. F. Wood, is one of the finest of American tenors, and has performed leading parts at Booth's Theatre in this city, with the Boston Ideal Opera Company.

Fred Seibert, formerly of the Western Union office, this city, is stage manager of one of Brooklyn's amateur dramatic associations.

C. G. Craig, now "on the road" as stage manager for Charlotte Thompson, is destined to occupy a creditable position on the mimic stage. His parts are leading heavies and juveniles. This gentleman has supported Edwin Booth upon several occasions, and possesses the requirements of a popular actor, being tall, well formed, with an excellent voice and easy self-possession.

Chas. H. H. Cottrell, now with the Associated Press in Washington, occupied for some years in England a literary position with the Lydia Thompson Burlesque Troupe, and subsequently in this city collaborated with Mr. Edward Harrigan the sketch familiarly known as the Mulligan Guards.

Actors are famous for liberality toward deserving brethren or sisters who are debarred from earning a livelihood before the footlights, and innumerable instances could be recounted of the sympathy shown members of their order temporarily strangers in a strange land.

This fraternal freemasonry is also characteristic of telegraphers; they, like actors, are connected by social ties—not always engendered by personal communion, as actors' are, but often through the not less potent medium of the wires.

#### Completing the Organization.

The third meeting of the New York Electrical Society, on Wednesday evening, March 2, was called to order at 8 o'clock by President F. W. Jones. After the reading of the minutes the election of the four members of the Executive Committee was proceeded with. After considerable balloting, Messrs. C. S. H. Small, G. L. Wylie, E. C. Cockey and E. A. Leslie were declared elected. Mr. Brick having resigned the office of Treasurer, on account of some intimations made to him that the manner of his election at the previous meeting was not strictly fair and proper, balloting for treasurer was the next business in order, the result being the re-election of Mr. Brick. The letters of regret spoken of in our report of the last meeting were read, and on motion ordered to be placed on file. On motion, the Executive Committee was instructed to look out for a place of meeting and report at the next meeting, to be held at the same place, the United States Hotel, to-morrow evening, March 16, at half-past seven o'clock.

Notice was given that the evening now set for meeting nights, namely, Wednesday, was found to conflict with engagements previously made by several members whom it would be desirable to have present, and that to-morrow night the

question of substituting another evening in place of Wednesday would come before the meeting for action.

During the evening a large number of names were added to the list of members, it being decided that all names entered up to that evening should be considered charter members. Many of those present also paid the initiation fee, \$1.00, and the dues for the first quarter, 75c. The meeting adjourned at 10:30. We understand that since last meeting an exceedingly generous offer has been made the society by Mr. Hewitt, of the Cooper Union, in reference to furnishing a room for the meetings practically free of expense. The membership of the society is already about 200. The following names have been added in addition to those already published:

James Hamblet, R. H. Morris, Charles S. H. Small, Michael Breslin, Richmond Smith, Edward M. Anson, Henry Rothenich, J. H. Young, George W. E. Atkins, W. R. Warren, D. H. Bates, A. R. Brewer, Clayton S. Fitch, D. B. Mitchell, Ralph W. Pope, James W. Simonton, C. E. Chinnock, J. B. Van Every, H. L. Storke, Clarence Carey, C. L. Buckingham, W. B. Van Size, A. Beatty, W. B. Sheldon, J. J. McKenzie, Geo. E. Hinman, Geo. M. Phelps, R. Waycott, Wm. F. Widmayer, Daniel M. Adey, W. R. Pope, Wm. W. Shanon, A. K. Thompson, J. F. Donnelly, H. F. Ogden, A. D. Brooks, J. F. Toole, Wm. W. Wight, Irving S. Fitch, E. O. Alyea, G. L. Wiley, I. M. Taylor, J. R. Mix, J. Hemmens, R. C. Malloy, A. E. Robinson, J. M. Foster, G. D. Farwell, Jabez Fearey, F. F. Fearey, E. Willet Smith, Fred D. Marsh, Edmond Hoffman, J. H. Longstreet, C. M. Fulton, John Van Horne, A. D. Thompson, Barclay Gallagher, Willis H. Jones, A. B. Chandler, F. L. Pope, L. G. Tillotson, J. R. Wiley, Samuel L. Taylor, B. M. Plumb, J. F. Noonan, T. G. Ellsworth, A. McDonald, A. P. Martin, J. F. Reynolds, A. H. Dingler, R. D. Riley, A. Voyer, M. J. Doran, J. K. Knight, H. E. Robson, I. A. Sherman, T. F. Taylor, R. S. Keith, O. K. Newton, John Simmonds, Ignatius L. Byrne, Samuel L. Nash, G. B. Hubbell, W. E. Sawyer, T. D. Lockwood, D. H. Craig, Theo. Larbig, Norvin Green, H. J. Merriman.

#### Western Union Quarterly Meeting.

The usual quarterly meeting of the directors of the Western Union Telegraph Company—the first regular quarterly meeting since the consolidation—was held at the executive offices of the company, in this city, on Wednesday, March 9, and a dividend of  $1\frac{1}{2}$  per cent. declared on the capital stock of the company out of the net revenues of the quarter, payable on April 15, to stockholders of record on March 26. Interest of  $1\frac{1}{2}$  per cent. was declared on the certificates of indebtedness of the company which may not have been converted into stock issued for the American Union and the Atlantic and Pacific purchases and to the old stockholders of the Western Union to the amount of about 48 per cent. The transfer books of the company were opened on the same day for the exchange of new stock for the A. & P. and American Union certificates of indebtedness, and for the A. & P. stock formerly held in the Western Union treasury, but distributed among the stockholders under the terms of the telegraph consolidation. The new stock intended for the Western Union stockholders, the issue of which was restrained by the injunction of the courts in the Williams suit, is represented to them by certificates of indebtedness which do not possess voting power, but which receive interest at the same rate as the company's dividends.

The quarterly report of the executive committee for the quarter ending Dec. 31, 1880, shows that the actual net profits were \$1,026,556, or \$74,749 more than the estimate made at the last meeting on Dec. 8. The following revised statements, based upon complete returns, will show the condition of the company at the close of the

quarter ended Dec. 31, 1880, as compared with the corresponding quarter of 1879:

	1879.	1880.
Surplus Oct. 1, as per last quarterly report.....	\$1,143,873	\$193,130
Net profits, quarter ended Dec. 31....	1,529,169	1,026,556
	\$2,673,043	\$1,224,686
From which deducting:		
Dividend of $1\frac{1}{2}$ per cent., paid Jan. 15, 1881.....	\$1,127,596	\$615,061
Interest on bonded debt..	107,425	106,687
Sinking fund appropriations.....	20,000	20,000
Construction account.....	256,468	327,276
Purchase of telegraph stocks and patents..	53,624	7,395
	1,565,115	1,076,400
Leaves a surplus Jan. 1 of.	\$1,107,927	\$148,285

\* In 1879, the quarterly dividend was  $1\frac{1}{4}$  per cent., and an extra dividend of 1 per cent. was also paid.

In the estimates for the quarter ending March 31, 1881, the sum required before the consolidation to meet the claims of the Atlantic & Pacific Telegraph Company, which amounted to about  $12\frac{1}{2}$  per cent. of the gross earnings of the Western Union Company, is excluded. The net revenues for the quarter ending March 31, inst., based upon official returns for January, nearly complete returns for February, and estimating the business for March, is put down at about \$1,669,173.

#### Edison and the Electric Light.

To the Editor of The Operator:

SIR: In view of the recent successful researches of Dr. Maxim, and the electric light's nearer approach to perfection, I deem it necessary that something should be said or done in order to guard the world from erroneously giving credit in this matter where it is not due. As an example I might mention the case of the telephone, where not until two years after the introduction of Bell's instrument, did Mr. Edison patent his first articulate telephone transmitter. Yet to this very day Edison's name in telephony is to many people what Elias Howe's is in regard to the sewing machine.

I do not mean for an instant that Edison is not justified in claiming originality for his molecular telephonic transmitter, but I do say that it was not shown to the world until two years after the invention of Professor Bell. In furtherance of this view, it is my intention to show how little Mr. Edison has done in the field of electric lighting, and to show further how much he claims and gets credit for that justly belongs to others; for, to grant him all that he and his many admirers claim, would be doing a gross injustice to that great army of inventors now working for the same end.

To be brief in the description of the Edison light, I need only say that it is a combination of three things, namely: Starr's lamp, Siemens' generator and Faraday's principle of subdivision of electric currents. All these things are certainly original, but, unfortunately, not with the "Wizard of Menlo Park." Because he should give these the name "Edison Electric Light," is no reason why they are such. Mr. Edison has already said that Hughes' microphone was an infringement upon his carbon molecular telephonic transmitter.

With Siemens' generator you are acquainted, as also with Faraday's (or modernized as Edison's) subdivision of current. In so far as the lamp is concerned, suffice it to say that it was invented years ago, and at a time when dynamo machines as a source of supplying electricity were unknown to the world. Mr. Starr saw at that time that it was impossible by means of a current obtained from chemical decomposition to supply an electric light to compete with gas, and accordingly abandoned the idea. Shortly afterward the inventor died, and nothing more was heard of the lamp until Siemens, of Europe, gave us the benefit of his dynamo machine. Then Edison adopts the old lamp and supplies it with a current obtained from a generator. This is the Edison light.



I fail to see why Edison should receive any commendation for this. If he had done anything toward further perfection of the lamp or system of lighting, praise might be due him, but further than that he has done nothing, except to combine these three things under one title and make announcements that he was going to do this or that, and show statistics which were based on the principle that if  $x$  equals nothing  $10x$  equals 20, as every person knows who has read anything about it.

Dr. Maxim, unlike Edison, took up the same lamp; but the difference that characterized the labors of these two men was that while Mr. Edison took it as is was, and tried to make us believe it was his own, Dr. Maxim improved its condition by introducing an entirely new principle, namely, the substitution of gasoline vapor where the vacuum was formerly used, thus making it, by the chemical action of the gas, a perpetual lamp.

I do not care to argue the case, as it is not necessary in order to show that Edison has no more, and not as much, claim on the light than he has on the telephone. But I simply desire to state that there is no such thing as Edison's light. That term is a misnomer. It should be "Siemens', Farraday's and Starrs' light."

W. EASTERN.

NEW YORK, Feb. 18, 1881.

### Chicago Notes.

To the Editor of The Operator:

SIR: The seventh annual reception and ball of the Chicago operators was held at Martine's Hall, Feb. 24. Over one hundred couples were present. At 8:30 P. M. J. E. Pettit, Assistant Manager W. U., led the grand march. Dancing was kept up until midnight, when the company adjourned to the banquet hall—Mayor Harrison presiding. Before supper was concluded his excellency was called upon for a speech.

After excusing himself for coming unprepared, he continued in some brief but happy remarks, reviewing the telegraph from its infancy, the grand strides it had made, its present objects and purposes. He hoped the Western Union would not squeeze the operators too tight to help pay dividends on watered stock. He considered the position of operator one of very great trust. Great secrets were very often intrusted to them, and they had never yet abused the confidence.

After supper, all repaired to the ball-room to finish the balance of the programme. Before dancing was resumed a consolidated informal singing club, composed of Messrs. Long, Rowe, Hughes, Stevenson, Sherwood and others, favored the guests with some of their popular melodies, all joining in the choruses. This feature of the evening was very much enjoyed. Dancing was then resumed and kept up until 3:30 A. M., when the vast assembly repaired to their respective homes, everybody highly delighted with the night's entertainment. All agree in the opinion that it was undoubtedly the most enjoyable ball ever given by the Chicago operators, and one that will long be remembered. Not a hitch occurred to mar its continuous pleasure.

Over the entrance to the hall was suspended an enormous "73" in flowers. In front of the orchestra stood Dr. Rice's perfumery fountain, with three splendid bouquets. This was much sought after during the evening.

The toilets of the ladies were very rich and beautiful and displayed admirable taste. Misses Lane, Conolly, Clark and Kent deserve especial mention. Don't know when we ever saw them looking so charming. (No bouquets, ladies). The gentlemen were not found wanting in the dark and dressy elegance of their costumes. Messages of congratulations were received during the evening from various points. The several committees deserve hearty thanks for their able, energetic and happily harmonious conduct of the whole affair.

Following are names of some of the guests from out of town: Mr. William Mahr and wife; Messrs. Ramsey, Feed and Dunn, of Milwaukee, Wis.; Messrs. J. C. Koons, of Peru, Ill.; William H. Arlington, of La Salle, Ill.; F. M. Crittenton, E. L. Armstrong, G. W. Arbuthnot, Miss Kate Mahony, J. R. Mayor, and W. D. King, all of Omaha, Neb.; P. A. Rogers and C. H. Cobb, of Minneapolis; A. W. Holly, W. H. Bangs, and P. O. Palmer, of Streator, Ill.

PERSONALS.—John Root has resigned and gone to Minneapolis, Minn., to copy press reports. Arrivals.—Charles Johnson has resigned the position of Manager W. U., Rock Island, Ill., and accepted a situation on the night force, this office. All are pleased to see him among us again. S. Crow, from the A. U. to the W. U. day force. Mr. Church, transferred from Dwight, Ill., to night force here. Johnnie Kerrin, from Syracuse, N. Y., to W. U. night force this city. Dan Sweet, on at night. Miss Coats, C. S. Alberts and Ed. Dodge returned from vacation. Messrs. Thayer, Wallace, Lester and Thompson copied Garfield's inaugural address in their usual fine style.

### Bridgeport Notes.

To the Editor of The Operator:

SIR: Telegraphic business in this city is remarkably well provided for, the companies just now maintaining no less than five offices. This number will, undoubtedly, be somewhat reduced when the much-talked-of centralization of offices and forces takes place, which "duplexing" will probably merge all minor offices into one central office, with a branch on the East side.

The different operators throughout the city seem to regard the late consolidation with a philosophical turn of mind, and, as a general thing, do not apprehend any trouble or difficulty in securing positions in other branches of business, should the late "coupling up" leave them out in the cold.

The consolidation, however, is looked upon by our business men with little favor, and, basing our opinion upon the general feeling so far shown, we think the Rapid Company would do well were it to establish an office here, that would offer to the business men of Bridgeport a prompt and reliable telegraphic service at a moderate tariff.

As a result of the consolidation, the A. & P. Co. have recently removed their office location on Wall street, to that of the W. U. Co., and we are daily expecting to see the American Union packing her "grip sack" with a view to engaging a sit at the same place.

The city's telegraph forces, as now distributed, are located as follows, and the company has every reason to congratulate itself on the efficient and brilliant selections it has made: The well-appointed office of the American Union and the large business of that company have been well-managed by Mr. J. S. Krum, a gentleman of considerable experience in the business, who has been very ably assisted by Miss K. B. Porter, a lady possessing fine social qualities, and an expert operator. We are indeed sorry to see this popular office closed, and there are many business men who will echo the regret.

Directly opposite the American Union, pleasantly located in the Sterling House Block, is the comfortable and well-arranged central office of the Western Union Company. In the person of Mr. W. S. Harris, manager, we meet a courteous and affable gentleman, who, on inquiry, kindly gives the "personnel" of the office as follows: W. S. Harris, manager; H. W. Barbour, chief operator; Miss E. T. Bacon, clerk; Mr. F. Hubbard, bookkeeper; Misses E. T. and A. A. Larkin, operators. This array of talent Bridgeport has reason to feel proud of.

Mrs. A. L. D. Barbour is the obliging and capable operator at the Union Depot.

The east side branch offices are well attended to by the Misses F. G. Downs and J. Penfield, Western Union and American Union respectively.

CAMBRIDGE.

BRIDGEPORT, Conn., March 3, 1881.

### Niagara Falls Branch N. Y. C. R. R.

To the Editor of The Operator:

SIR: A more aspiring and wide-awake set of men are seldom found than one may meet on a trip over the Niagara Falls branch of the N. Y. C. R. R. I need not say anything of the train dispatcher, J. Drexelins. He is very much esteemed by all the operators. Mr. Sornberger, his assistant, is always equal to the emergency. First, we find at Spencerport Mr. Austin, who seems content in performing his ordinary duties in a most extraordinary manner. Next comes, at the Basin, Mr. Nelson, who is full of business, with a coal-yard under his supervision. He is also agent for the famous Elgin and Springfield

watches, and has a constant supply of clocks standing in every corner of the depot.

Now comes Mr. Burroughs, at Brockport. West, like Nelson, is wide awake, and can furnish you a fine watch reasonably low. Besides this he is extensively engaged in a manufacturing business. Of what? Why, talent. Telegraph talent; always with two aspirants under his fatherly direction.

Messrs. Waite, at Holley, and Manson at Murray, seem content with the business allotted them by the N. Y. C. R. R. Here we are at Albion, face to face with Miss Hattie Smith, who has served the N. Y. C. some eight years, and is thought a great deal of by the fraternity. She has for assistant Mr. Marsh, who is an expert on the organ, or, in fact, at almost any thing in the line of music. We pass Knowlesville with a G. M. to Lou Hitchcock, and bring up at Medina. Here is Randolph (a real handsome boy), ready to serve us with anything in the line of diamonds, rings, pins, studs, or the like. Walt is an extensive dealer. We shake our hat at Ritson as we pass Middleport and bring up at Gasport. Here is where things are really pushed forward. Mr. Dick Lahey will buy anything that can be hatched, reared or imported; fruits in season, butter, eggs; in fact, he is our Fulton Market. Like Burroughs, he has five embryo-telegraphers under his tuition. Mr. Ganung manages things at Lockport, days, and Mr. Dunkin, nights. Ed. Dunkin is a whole jewelry store. His stock consists of cameos, plain rings, pins, watches, charms and chains. Going ahead to the Junction, we find our friend Day, who has his acre of garden to tend to, but is always around for "33." Passing on to Sanborn, we see Mr. Latz, the stalwart Hancock supporter. Mr. Osterhout is at Suspension Bridge freight-house, and Sam Harroun, assisted by Mrs. Hennessey, tends the depot office.

Messrs. Belden and King take care of Niagara Falls days, and Mr. Cathcart tends nights, and they are just alive with business, too.

ONE OF 'EM.

### Toledo (Ohio) Notes.

To the Editor of The Operator:

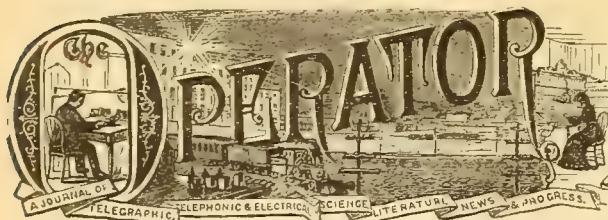
SIR: The American Union office in this city has been worked by a very much reduced force for the past month. Among those who have left us are Messrs. Kennedy, Ganson, Campbell, McGill and Williams. Our worthy superintendent, Mr. Seldon, has, however, provided for most of the boys in his district. Mr. McGill is manager of the consolidated office at Ypsilanti, Mich. Campbell has joined the W. U. day force in this city. Kennedy is now in the insurance business and making barrels of money. Ganson holds forth at Ann Arbor, Mich., while our fast man, Williams, "W. C.," has accepted a position as night train dispatcher with the Pennsylvania Railroad in this city. The present force consists of A. H. Thorp, manager; W. W. Umsted, chief operator, with J. H. Hosley as assistant; F. Robertson, night chief. G. E. Scent, M. S. Springer, F. J. Krumling, and Miss Celia Enright constitute the day force. D. F. Desmond is all night man. Mr. T. J. Stevens is manager of the Board of Trade office, and has two assistants.

The boys have been enjoying a hearty laugh, lately, at the expense of an operator who holds forth in the Detroit Western Union office. Out of respect for the youth's parents his name is withheld. It seems that some time ago he held the position of manager in a thriving Michigan town, and, if Madam Rumor is correct, he was considered somewhat of a lady's man. About a month ago, a lady operator who lives not more than a thousand miles from this city took a vacation and visited some friends who reside in the town where our friend was located. While there, she was royally entertained, and, upon one occasion, enjoyed a delightful sleigh-ride with the gentleman mentioned. Now for the sequel. Some time after the visit of the lady, our friend the manager sent his reports to the superintendent of his district, inclosing therewith a voucher for the sum of two dollars for approval. The item was not allowed, as the superintendent questioned the manager somewhat sharply and discovered that it was not a legitimate lineman's expense, as claimed, but a bill for the entertainment of the lady operator, and included the expense of the sleigh-ride, \$1.50, and confectionery, 50 cents!

TOLEDO, March 8, 1881.

HENSHAW.





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At No. 9 Murray Street, New York.

W. J. JOHNSTON, Editor and Publisher.

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Subscribers desiring their addresses changed, should give the old as well as the new address.

## SWEEP CLEAN.

Now that the new telegraphic management is about to reform the service, let it look into the cases of some of our so-called "managers," whose only claim to their positions heretofore has been their downright heartlessness in "saving" on the salaries of good operators, some of whom are married, with large families, or have been luckless and temporarily down-at-heel. The world will be benefited by an exposure; and, of all things in the world, the telegraphic service will be benefited. Many a "manager" will thus be compelled to seek his level, where, as a petty understrapper in some detective agency, or as a bailiff distraining his fellow-man for rent, he will doubtless feel more at home. We want men with level heads on their shoulders; men who can see two ways at once; men who can distinguish between judicious expenditure and extravagance, and men who can understand that bad pay means bad work all the world over, and that to save at the spigot while the rich liquid flows out at the bung-hole is only a mockery of economy. Let the investigation be quiet, but thorough and systematic, and we will guarantee to the investigators a grand crop of dust-covered official bladders and shams who have for many years been a dead-weight on the service. As we do not own the company, we shall not attempt to run it; but, when we see them, as it were, sweeping out, there can be no harm in suggesting that they swing the new broom around once in a while, and reach up after the accumulation of cobwebs. We can furnish a decidedly interesting list, with specifications, upon which to commence operations.

THE lecture delivered at the Academy of Music, Philadelphia, on Thursday last, on "The Associated Press," was a most interesting one to telegraphers, and attracted many members of that profession. The telegraph and the Associated Press, and the various newspapers comprised in that organization, have always been most intimately connected. It may almost be said that one is necessary to the other. At all events, the subject of "How we get our News" is always a most absorbing one to us, and it is decidedly interesting to telegraphers to know how the Associated Press got its news quickly in pre-telegraphic days. For instance, at the opening of the Erie Canal, 55 years ago (October 20, 1825) and twenty years before the introduction of the electric telegraph, the announcement of the joyous event was telegraphed from Buffalo

to Albany, a distance of 364 miles, in exactly one hour, by the firing of cannon at intervals of eight miles along the entire route. Since then the Associated Press has grown; since then the electric telegraph was born. At that time newspapers were few and far between, and their facilities for news-gathering were extremely limited. To-day, a careful estimate shows that the cities of New York, Philadelphia, Brooklyn, Newark, Boston, Jersey City and Chicago issue collectively 84 daily newspapers, with an aggregate edition of 1,693,000 copies, and an almost countless number of smaller towns following their leadership. Universal intelligence is concentrated in New York, and redistributed twice each day from that centre, and within an hour laid before 50,000,000 people on this continent alone. Of all the ramifications of this vast scheme Mr. J. W. Simonton has been director-in-chief for fifteen years—since November, 1866—and, consequently, no one is better qualified to speak on so interesting a subject. We hope to hear the lecture repeated in New York at an early date.

JOHN GEO. BOYCE was accepted as a member of the Telegraphers' Mutual Benefit Association in August, 1876. He paid his assessments for fifteen months, without being questioned, and died in November, 1877. After his death, the T. M. B. A. collected from his widow two assessments of a dollar each, and then refused to pay her her just claim. An utterly helpless woman was thus struck down, but the blow aroused a chivalrous spirit of which every American telegrapher should be proud. The individual members resolved to pay the claim voluntarily, and the sum thus raised already exceeds \$900, with a few agencies yet to hear from. The following is a complete list of the amounts received from each agency up to February 14.

Albany, N. Y.	\$16.50	New York, Waycott's	
Augusta, Ga.	11.50	Agency	11.00
Boston, Mass.	23.00	New York, through	
Baltimore, Md.	33.00	W. J. Johnston,	
Bangor, Me.	7.50	Publisher of THE	
Buffalo, N. Y.	23.50	OPERATOR	3.00
Cleveland, Ohio.	11.00	Nashville, Tenn.	15.05
Chicago, Ill.	34.50	New London, Conn.	9.00
Cheyenne, W. Ter.	10.50	New Haven, Conn.	4.50
Chattanooga, Tenn.	4.00	New Orleans, La.	14.00
Columbus, Ohio.	7.75	Ogden, Utah.	11.00
Through Geo. W. Ir-		Omaha, Neb.	4.50
win, from opera-		Poughkeepsie, N. Y.	5.50
tors at large	17.50	Pittsburgh, Pa.	26.00
Cincinnati, Ohio.	13.50	Philadelphia, Pa.	86.50
Dennison, Ohio.	16.37	Peoria, Ill.	3.00
Detroit, Mich.	16.40	Portland, Oregon.	4.00
Dubuque, Ia.	5.50	Portland, Me.	6.50
Denver, Col.	3.00	Phillipsburg, N. J.	12.00
Elkhart, Ind.	9.00	Richmond, Va.	18.50
Evansville, Ind.	2.00	Rochester, N. Y.	2.00
Grand Rapids, Mich.	.50	Reno, Nev.	11.00
Grafton, W. Va.	7.50	Reading, Pa.	1.00
Galveston, Tex.	10.00	St. Louis, Mo.	22.35
Haitfax, N. S.	5.50	St. John, N. B.	9.00
Hartford, Conn.	8.50	Sayre, Pa.	6.00
Harrisburg, Pa.	2.00	Syracuse, N. Y.	14.00
Indianapolis, Ind.	14.25	Springfield, Ill.	3.00
Jackson, Mich.	9.00	Springfield, Mass.	8.00
Jackson, Tenn.	3.00	San Francisco, Cal.	28.85
Kansas City, Mo.	26.50	Scranton, Pa.	11.50
Little Rock, Ark.	7.50	Savannah, Ga.	7.50
Lafayette, Ind.	2.00	Toledo, Ohio.	6.37
Louisville, Ky.	6.50	Troy, N. Y.	9.00
Minneapolis, Minn.	4.00	Vincennes, Ind.	8.25
Memphis, Tenn.	6.35	Watertown, N. Y.	4.50
Mobile, Ala.	8.50	Wellsville, Ohio.	5.90
Milwaukee, Wis.	8.25	Washington, D. C.	21.50
Montgomery, Ala.	5.00		
Montreal, Can.	3.00	Total	\$925.39
N. Y., General Agency	92.50		

THE telegraph suits the past two weeks have been about Nip and Tuck. Judge Blatchford has given the English cable companies a back seat—away back—and Judge Truax's opinion is averse to the proposed distribution of \$15,526,590, in accordance with the plan of consolidation. But our readers may depend upon it that that plan of consolidation is going through, all the same. As it stands now, in law, the honors are about even; but it is a settled fact in this country that a man who owns cer-

tain property in fee can do with it as he pleases, except to destroy its value in relation to the entire Commonwealth. So far, a vast majority of the owners of a certain property have said that so and so shall be done; a minority—Mr. W. S. Williams, with 100 shares, and, we believe, Mr. Rufus Hatch—have said it shall not be done; and it now remains to be seen whether or not a free American can dispose of his property in the most advantageous and business-like manner. We have no sympathy with a telegraphic monopoly, and we do not approve of it; but we want common sense and justice for all. If our people want competing telegraph companies, they must pay for them. They must understand that operators do not work for nothing; that it costs something to put up lines in a country where its lakes are like oceans elsewhere. Telegraph companies are not eleemosynary institutions. Let "The Public" do less talking and legislative bulldozing, and give us more money for opposition lines. America is free for all—don't forget it—for capitalist and bankrupt; free from the North Pole to Magellan's Straits, from the centre of the earth to the sky; and if we, as a free people, cannot compete for telegraphic patronage on a square, business-like basis, we had better give it up altogether, and go into coal mining, or some other profitable scheme.

A CANADIAN correspondent requests us to publish the answer to the following:

"Measuring for insulation, 40 miles gives 50,000 ohms. Ten miles further (or fifty miles of the same wire) gives 10,000 ohms. What are the figures for the last 10 miles?"

The answer is as follows: Measuring the wire from the testing station to the extension, 40 miles, we find it to be 50,000 ohms, or a mileage insulation resistance of 2,000,000 ohms.

Now, connecting to the other, we get for the 50 miles an insulation resistance of 10,000 ohms, or an average of 500,000 ohms per mile for the entire 50 miles.

As the average is so greatly reduced, it is obvious that the insulation of the last 10 miles must be much lower than the first 40.

Deducting the last result from the first—500,000 from 2,000,000—we find that we have a deficiency of 1,500,000 per mile, which must be credited to the 40-mile length. We, therefore, divide the amount of deficiency by the number of miles in the first section; that is, divide the 1,500,000 by 40—giving as a result 37,500. Then deduct this result from the first measurement—37,500 from 500,000—the final result being 12,500, which is the insulation of the 10 miles required. This, multiplied by 10, is, of course, the mileage resistance of the 10 miles required, 125,000 ohms.

Or we may get at it in this way: 2,000,000 ohms is the insulation resistance per mile of the first 40 miles. 500,000 is the insulation resistance per mile of the entire 50 miles, showing that the average of the 40 miles is just 4 times better than the average per mile of the 50 miles. Dividing, then, the 500,000 by 4, we get 125,000, which, divided by 10, to reduce it to the 10-mile length, gives 12,500 as the insulation resistance of the 10 miles.

THE Western Union has been rather unfortunate lately in preserving the secrecy of messages intrusted to it for transmission. It was only last summer that the private messages of Chairman Jewell, of the Republican National Committee, were given into the hands of Chairman Barnum, of the Democratic National Committee; and now we hear of a bale of old papers on the way to the



rag factory being accidentally broken open, and the streets of Hartford, Conn., being, in consequence, "full of old Western Union messages." Now, no one wants his private correspondence strewn all over Connecticut. Many a man sends a telegram, not for the saving in time which it affords him, but for the particularly impersonal manner in which he can thus approach his correspondent—virtually in the handwriting of the receiving operator, not his own; but when it comes to having the original copy kicked around the public highways, he has certainly no use for the telegraph. We have always thought that the company which deals in special messages, such as "blacks" and "reds," could still further improve upon the system by having, say, "blue" messages—a system by which, through a slight extra payment, the sender could have his original message returned to him personally, or mailed to his address immediately after it is sent. Anyone familiar with the nature of telegraphic correspondence—especially that coming under the generic title of social messages—will not be at a loss to imagine why certain patrons of the telegraph would not gladly pay double the usual price for a message in consideration of having the original draft returned to them. It is not pleasant to know that your messages will subsequently be sold to the junk-shop and possibly scattered all over the State of Connecticut.

It is a common joke to say that down in Delaware the police carefully lock up the doors and bar the windows of the State Prison every night so as to keep out the local burglars; but, whether this story be true or not, it could be no worse than the fact of an American District office being burned up in this city. The American District advertises that vigilance as to fire on the premises of its subscribers is one of its great specialties, and that every office is manned with a patent fire annihilator; but when the public comes to read of the flames destroying an American District office, in spite of its boasted vigilance, licking up the patent fire extinguishers besides, its confidence in American District cheap-labor methods is in a measure, so to speak, destroyed.

A REPORTER of the *Sun* interviewed an operator last week in this city, and learned that the spirit of distrust is very general throughout the ranks. The telegraph man told the reporter that "all the Atlantic & Pacific and American Union offices in Oswego, Peoria, Nashville, St. Joseph and Leavenworth, and those throughout Iowa, have been closed. With the exception of Milwaukee, none are open in Wisconsin. They are being generally closed throughout the United States, and you can look for a complete closing up of their offices when the consolidation is a working fact. I know that before the 15th of March the Buffalo, Cleveland, Toledo and Detroit offices, and all the offices under the Wabash Railway system of telegraph lines, are to hang out the Western Union sign."

THE 10th inst. was the twenty-seventh anniversary of the organization of the first Atlantic Cable Company. The original compact was signed by five persons—Cyrus W. Field, Peter Cooper, Moses Taylor, Marshall O. Roberts and Chandler White. For twelve years those men toiled before their scheme became an accomplished fact. At the end of that time Captain Hudson, after the cable had been drawn to its anchorage on shore, surrounded by his crew with uncovered heads, fell upon his knees, and, be-

neath the stars, gave thanks to Almighty God for his gracious favor and for the new power then born into the world. "Peace on earth, good will to men," was then flashed under the sea, and the good work has gone steadily on.

NOTHING better shows the character and ambition of the members of our profession than the steadily increasing circulation of THE OPERATOR and the great sales of our books. The works of reference, such as the Dictionary and Telegraphic Tales, and the standard electrical works, are taken so readily and so generally that there is no mistaking the extent to which electrical knowledge is being diffused, and the good effect which it must have ultimately upon the profession at large. Many apparently poor operators, in far-away districts, are ordering at one time a full list of our books, and are thus laying the foundation of a useful and ornamental home library.

CONSOLIDATION and monopolies seem to have become general. A recent dispatch from London says that the West Coast Company, now operating cables in Peruvian waters, has completed arrangements to connect with the Central and South American Cable Co., by way of Panama, Central America, Mexico and the United States to Europe. This will be a good thing for our merchants, since all messages from this country for South America are now sent across the Atlantic to Portugal and thence back again to Brazil. The new connection will save a distance of 8,000 miles in transmission and about six dollars a word on the cost of messages.

THERE is a new instrument going into use in England for the purpose of receiving Greenwich time signals at telegraph stations, etc. Hitherto, the passage of the time signal current along the lines gave no other indication of its presence than a deflection of the needles of ordinary instruments and a corresponding movement of the armature of the Morse ink-writer and sounder at 10 A. M., and the eye had to be kept constantly on the instrument to learn the exact time. In the new instrument, there is an arrangement which rings a bell and at once arrests attention when the first part of the time signal is transmitted.

THE AMERICAN RAPID TELEGRAPH COMPANY, at a meeting of stockholders last week, voted to increase its capital stock to \$10,000,000, and to extend its lines to the principal cities in the United States. The directors, at a subsequent meeting, directed the treasurer to offer the \$6,000,000 of increased stock to stockholders of record of 15th inst., pro rata, at par, the right to expire on 25th inst. They also authorized the President and Executive Committee to make contracts for extensions at once.

THE payment of the Boyce claim is now an assured fact. The case, after being tried *coram non judice*, has been brought before the High Court of Appeals—the operators—and has been honorably settled. The fund has now reached over \$925, and we hope that no effort will be spared to make up the full amount due. It is, at all events, a most gratifying exhibit, and proves that the telegraphers will permit no stigma to be wrongfully put upon the memory of a deceased comrade.

SINCE Senator Windom has been called to the Cabinet of President Garfield, additional weight has been given to the meaning of his extraordi-

ary letter to the Anti-Monopoly League, in which, among other ridiculous things, he intimated that the great telegraphic combination was about to capture the Associated Press of New York. Senator Windom thus places a very small estimate upon the ability and power of the press, but he need give himself no anxiety on the subject. The press will look out for itself.

THE latest improvement in our methods talked of is a public competitive trial of the several systems of electric lighting. The various inventors are holding back, one being afraid and the other daren't, for they have all been a trifle sensational. But the critical public has at last recognized that the day of promises has passed, and demands the competitive trial. The first company to issue a challenge will become immensely popular, for everyone wants light on the subject.

OUR Government should appoint a commission of skilled telegraphers to attend the Paris Exhibition of Electricity. Hitherto, among other things, it has been nearly impossible to obtain a full and sufficient comparative estimate of competing systems of electric lighting, but the result of the examination of the committee intrusted with the consideration of them at this Exhibition is very likely to be accepted by the people of all nations as final for years to come.

Now that reforms are being introduced in the telegraphic service, it would be a good time to abolish the deadhead, or free, business. There is no good reason why every man should not pay for his own telegraphing. The senders of messages might also be forbidden to use prefixes such as "Col.," "Mr." and "Messrs.," and affixes, such as "Esq.," in the address, unless paid for as extra words.

FIFTEEN hundred miles a minute brings to the mind dreams of "wings as swift as meditation, or the thoughts of love," yet that was the speed of the cable message to Australia, announcing the result of a boat race—12,000 miles in one hour and twenty minutes.

MESSRS J. H. BUNNELL & Co. again present, in a full page of this issue of THE OPERATOR, the remarkable indorsements of their new Steel Lever Key. The testimonials embody very favorable opinions from over five hundred practical telegraphers in all sections of the United States.

THAT Second Division of the Telegraphers' Mutual Benefit Association seems to be in a pitiable state of collapse. The First Division tried to squirm out of the Boyce claim, and "Bad Pay" is a poor motto with which to start an offshoot. Pay the Boyce claim first.

THE dividend declared by the Western Union last Wednesday is virtually an actual dividend of 1½ per cent. on the entire capital of the new company of \$80,000,000. This is a good beginning.

THE Western Union has declared a dividend of 1½ per cent. on its stock, as well as on the certificates of indebtedness issued to holders of the stock of American Union and Atlantic & Pacific.

MR. D. O. MILLS has resigned his position as a director of the Western Union, and Mr. Sydney Dillon has been elected to fill his place.

WESTERN UNION stock is quoted at 116½, A. U. at 80¾ and A. & P. at 48¾. Last issue they were 110, 67½ and 44, respectively.



## Ogden, Utah, Items.

To the Editor of The Operator :

SIR: Since last item from here many changes have taken place. The latest arrivals are John Fletcher, Charles H. Crowell, J. B. Sheldon, and A. J. Booth. Departures: Frank Umphred, for Gotham; John Ledwedge and R. A. Empey, for Virginia City. The latter went to Virginia to confer with Hop Kee upon matters pertaining to the Chinese treaty. Charlie Crowell brought with him an insatiate desire for mince pie, and this constitutes the chief staple of his diet. John Fletcher is night chief, and is generally liked. M. J. Burke is day chief. A partition now separates the rabble from the manager, who is thereby enabled to transact clerical business away from the din of the instruments, and also to conceal from prying eyes the communications bearing the device, "respectfully referred."

The Telephone Exchange here is in a prosperous condition and shares advancing. Mr. Pattison, manager of the W. U., is at the head of this department. John L. Morris is reported to have recently sent over a rocky railroad wire, 60 messages an hour for five hours, to Omaha, the receiver being a young lady, "Effie" by name. This is a worthy record.

On dit, that A. W. Todd will return here soon, after a year's sojourn in Denver. Two ladies, Mrs. Barnum and Miss Amy Stephenson, serve by their presence to maintain decorum at the main office. Fred Rawlins, for six years train dispatcher on C. P. at this place, has resigned and is succeeded by Mr. Pierce, the next in rank. Many will doubtless remember O. H. Pratt, who, 8 years since, at Salt Lake, was considered one of the stars. He is not telegraphing now, and dissipation is hastening the approach of the man with the scythe and glass. Aaron Hilliker, also an old landmark, is at Dillon, Mont., in charge of U. & N. R. R. office. Los Mimbres, N. M., is to be a second Ogden, being junction of the Southern Pacific and A. & T. & S. F. Railroads, and there is much conjecture as to who will be appointed to take charge there. When once established, it will relieve the present crowded condition of wires on this route, for which over-worked telegraphers will be thankful. The boys here are now pretty well settled, and no departures are contemplated. "Are you working for McNum or Woolner this month?"

OGDEN, Feb. 29, 1881.

AJAX.

## Cleveland Chronicles.

To the Editor of The Operator :

SIR: The A. & P. office in this city was closed last Friday, and the majority of the operators transferred to the Western Union, but it is rumored they are employed only until the tenth of this month. The outlook for operators just now is certainly not very good. Those thrown out of employment here by the recent consolidation will look anxiously forward to the time when the Merchants' Company will open up, which, it is said, will be but a few months.

Mr. Edgar W. Collins ("I Dunno") is slowly recovering from his long and severe illness, though it will, perhaps, be several months before he is quite himself again.

Mr. Fred Remy, one of the army of traveling telegraphers, has concluded to stop a short time with us, and take in some extra before continuing his trip across the Continent.

THE OPERATOR'S portraits of distinguished telegraphers gives general satisfaction here, and is, alone, considered by all well worth the subscription price of the paper.

Mr. C. F. Williams, for many years chief operator at the A. & P. office, is taking National Press report at the Western Union. Mr. Will Cummings, a former Cleveland operator, is train dispatcher at Palestine, Texas.

CLEVELAND, O., March 9, 1881.

BRUTUS.

## TELEPHONE DEPARTMENT.

The musical telephone puts on too many airs.

Toronto papers say that the telephone wires were rendered almost useless in that city during the snow-storm last Friday week.

The telephonic exchange system in Cleveland, Ohio, and several other places, contemplates a tariff based on single messages, a "message" consisting of a conversation through the ex-

change occupying five minutes or less time. The charge is ten cents per "message," beside which tickets good for one message each are sold at the rate of \$7 for packages of 100.

The Government of Queensland, Australia has recently introduced the telephone both for Government and private use in that colony. The Government provides and maintains the lines for a rental of £5 (\$25) per mile per annum, and those participating in the benefits supply and keep in working order the required instruments, which, by regulation, must be solely used for their own business.

A dispatch from Washington, D. C., on the 11th inst., says: A few weeks ago more than 200 patrons of the local telephone company rebelled against an extraordinary increase of the prices of service, and formed a protective association. Since that time very little has been heard of the controversy, but the members of the association are faithful to their compact, and are determined to break down, if they can, what they regard as an oppressive monopoly. Among the members is a firm of real estate agents, who control 100 houses. They intend to compel the company to remove its wires from all these houses. Others are taking the same course, and it is expected that in a short time the company will find it difficult to extend its many wires to the houses and offices of subscribers who still submit to the rates.

The following correspondence over the telephone wires yesterday, says the Kansas City Times, is a further proof of the fact that no one but a bald-headed man could do without one:

"Hello, central!"

"Hello!"

"Connect me with the signal bureau."

"All right—go ahead."

"Hello, signal!"

"Hello!"

"Is it going to thaw to-day?"

"Yes, there are indications."

"How's the wind?"

"Getting around to the south."

"Do you think I can safely have my hair cut?"

"Wait a minute until I consult the barometer, thermometer and wind gauge." (Silence for half a minute.)

"Hello!"

"Hello!"

"Yes, you can go ahead. There won't be any change to speak of for the next twelve hours. There is a cold wave moving up the Ohio River, and a snow-storm is reported at Cheyenne, but if I were you I'd take my chances on the hair cutting."

"All right—much obliged."

"Good bye."

## DASHES HERE AND THERE.

The "brush light."—A barber's lazy boy brushing your clothes.

All the principal light-houses in France are soon to be provided with electric lighting apparatus. The contracts have been already awarded.

A dispatch dated Havana, March 6, says that the English steamer Hooper has successfully laid a cable between Cienfuegos and Santiago de Cuba.

It is said that an 800 horse-power engine will be used at the Electrical Exhibition at Paris to work 600 electric lamps, which are to be distributed about the building and grounds.

The Hite Mine, recently sold in this city for \$600,000, and which had previously yielded its owner net profits to the amount of \$1,300,000, adjoins the North Hite and Yosemite mine, advertised in THE OPERATOR.

On the 11th ult. an application was made to the Postal Telegraph Department by the War Office, in England, for a complete equipment of telegraph matériel, operators, etc., to be shipped for the Ashantee coast. The length of line to be erected is ten miles.

Ordinary letter-paper, if well heated and briskly rubbed with the hand or with a brush, acquires electric properties. It adheres to tables and walls, and when the hand is brought in contact with it slight electric discharges are quite visible if the experiment is made in the dark.

There was a small electric railway opened for

exhibition purposes at the Calcutta Zoological Garden, and it was greatly patronized by visitors. When it was taken down, regret was expressed. This mode of transit has evident advantages for cities, and during warm weather.

It is said that when the new contract between the New York, New Haven & Hartford road and the Western Union Telegraph Company has been arranged, the telegraph offices at Norwalk, Stamford and Bridgeport, Conn., and New Rochelle, N. Y., will be kept open all night.

The newspapers are extracting lots of fun out of the telegraph consolidation. One says that the color of the new telegraph stock should be old Gould; another suggests Green; a third one thinks they should be printed on the press that Vanderbilt, while a fourth Sage-ly says these are Keene witticisms. That Bates all.

A telegram from Ottawa, Ont., says that the Minister of Justice introduced a bill March 11 to prescribe the oath to be taken by employes on telegraph lines under control of the government. There is a strong disposition in Parliament favoring the government assuming control of the telegraphic system of the Dominion.

Information has been received by the Cuba Submarine Telegraph Company (Limited) of the successful laying of their new cable between Cienfuegos and Santiago de Cuba. This is the third cable which has been laid by the company between these points, but, as the 1870 one has ceased to work, only two are now in operation.

Combette's electric pipe-lighter is composed of a bichromate of potash battery inclosed in a bottle hermetically sealed, the two poles of the battery being connected with a very thin platinum spiral placed above the candle. To light it it is only necessary to tilt the bottle, when the battery becomes active and heats the spiral.

On the 7th inst., the President of the Mexican Cable Company in this city received a cablegram from Bogota stating that the President of the United States of Colombia had executed a contract with the Central and South American Cable Company, north and south from the Isthmus of Panama, to connect with the United States and Europe, by way of Central America and Mexico.

An automatic buoy having a 10-inch whistle and a glass globe for an electric light has been moored in 13 fathoms of water to the southward of the Sandy Hook lightship and about three cables' length away. The inventor of the buoy claims that it will show an intermittent electric light, the electricity being generated by the action of the waves. The Lighthouse Board has permitted this buoy (the private property of the inventor) to be placed where it is to test it.

A dispatch from Ottawa, on the 2d inst., says: To-day Mr. Langevin, Minister of Public Works, moved in the Commons for assent to a resolution approving of the scheme proposed by Mr. Sandford Fleming, late chief engineer of the Canada Pacific Railway, for the construction of a cable from Nanaimo, in British Columbia, to Yeddo, via the Aleutian Islands. A company had offered to lay the cable conditionally on receiving a twenty years' monopoly. The motion was lost, the House objecting to the monopoly clause.

Thomas A. Edison has removed from Menlo Park to this city with his family and all but one of his assistants, and is now living at No. 65 Fifth avenue. The house was formerly known as the Bishop mansion, and has been leased for a long term of years by the Edison Electric Light Company. The technical department of the business is now carried on here. The offices of the Edison Lumining Company of New York, the Edison Electric Light Company of Great Britain and Europe, and the Edison Electric Railway will also be in the building.

"What keeps this frame going?" exclaimed Dr. Tanner to an Indianapolis Journal correspondent. "Electricity! That's what does it. We are run by lightning, and Edison might profitably make some experiments on it. I believe that I was kept alive for those forty days by the electricity obtained from the air and the water. Faraday estimated that in a teaspoonful of water there is enough electricity to make a good sized flash of lightning. I claim that it is electricity that runs this machine, and I am willing to stake the machine on the correctness of my theory."



A patent for till alarms or safety money drawers has recently been issued to Mr. Walter L. Cheney, of Orange, Mass. The contrivance is said to be ingenious in construction, easy in operation and very secure. Mr. Cheney was formerly draughtsman and operator for the Pratt & Whitney Co., Hartford, Conn., and is at present foreman of the Gold Medal Sewing Machine Co., Orange, Mass. He is anxious, however, to secure a position as designer and draughtsman, and prefers electrical work. Those requiring services of this character can address Mr. Cheney at Orange, Mass.

One of the handsomest of publications is the *Illustrated Scientific News*, published by Munn & Co., New York. Every number contains thirty-two pages, full of engravings of novelties in science and the useful arts. The March number contains, among various other subjects illustrated, a number of engravings of Capt. Eads' proposed ship railway across the Isthmus, and a novel hydraulic railway locomotive. The *Scientific News* will be found instructive and entertaining to all classes, but will be best appreciated by the most intelligent. Published by Munn & Co., 37 Park Row, New York, at \$1.50 a year, and sold by all news dealers.

There was recently an exhibition in this city of the House rapid telegraph system, and everything worked to the satisfaction of all present. House, it will be remembered, is one of the founders of the present telegraphic system. The first machine of the rapid telegraph plan resembles a type-writer. The operator works off the message on the key-board, but instead of printing the words they are cut out in the paper. This perforated message is then sent through machine number two. All that has to be done is to turn a crank, and the words and figures go like lightning. There is hardly any limit to the speed at which the message can be sent. Machine number three receives the dispatch and prints it automatically. The message can be received without an operator, and can be sent to the person it is intended for without being rewritten.

The *Toronto Mail*, of February 23, says: "A very interesting operation was performed in the Toronto General Hospital at 2 o'clock on Saturday afternoon. It consisted of amputation by means of electricity, of the left leg at the hip. The patient, a young man, being reduced very much by the sloughing of an open wound on the outside of the leg, it was desirable that he should lose as little blood as possible. Having placed the patient under the influence of ether, the customary flaps were made, and then a platinum wire, attached to the two poles of a galvanic battery, was encircled round the leg under the flaps. In a moment this wire was brought to a white heat, and began to cut its way through the limb. By the great heat the ends of the arteries were contracted, and only the larger ones required to be tied. Many of the leading surgeons of the city and a large number of the students from both schools were present."

The question has often been asked as to what becomes of all the old telegrams, which, throughout the United States, must accumulate at the rate of at least ten tons weight every day. The question was indirectly answered on the 25th ult. by a telegram from Hartford, Conn., which announced that a package of paper stock on its way to the Walker Paper Mill had burst open and that the street had immediately become full of old Western Union telegrams. The bale was made up entirely of old telegrams on their way from the Western Union building in this city to the paper mill. President Green, when asked how such an accident could happen, said: "We collect all the filed telegrams in the uppermost story of this building. They are preserved in order that we may have them for exhibit in case of any trouble. Chicago is the collecting centre for the Western States, while here we gather in the telegrams from the Eastern, Middle and Atlantic States. After six months they are baled up by a machine we have and securely sewed and strapped in packages. It was our habit to sell to any mill and then send a man along with the packages to see the paper made into pulp. About seven years ago we made an arrangement with Mr. Walker, and he takes all the old stock, which is sent directly from this building to his paper mill. We could not very well burn the papers, for we have in this city

alone about 65,000 messages a day, and they weigh nearly 250 pounds, and then the accumulation from the out-of-town offices swells the amount very materially. We guard the dispatches all we can, but they do leak out. You remember how they got out in the campaign of 1876. Well, the Everett House, where the Tilden committee met, was on the same wire as the Westchester House in the Bowery. There the office was in the hotel lobby and a man sitting there with a paper before him was within ear-shot of the instrument and so could take in all the messages *in transitu*. This we have since found out was actually done. We use every precaution we can to insure the privacy of dispatches, but accidents will happen even in the best of households, and just now, you know, we have three households in one."

## NEW YORK CITY ITEMS.

### Echoes from 195.

Mr. Wm. F. Lewis, who for the past month has been temporary manager at Glens Falls (N. Y.) office, has again returned to 195.

Mr. Tom Allen has been appointed Traffic Chief at Large, and the appointment gives much satisfaction in the office. Mr. Allen is an old and faithful employé of the company and deserves the promotion.

A correspondent at 195 writes: THE OPERATOR'S Chicago correspondent, in his notes of last issue, strikes a responsive chord in the breasts of all modest telegraphers, when he bewails the too prevalent custom of "talking shop" in public places. If operators cannot speak intelligently upon any subject but that of their profession, they may at least adopt a confidential tone of voice that will not attract attention from all around them, and provoke a general stare of amusement at the expense of the indiscreet babblers of telegraphic exploits. Let these youths adopt the expedient of a prominent soap manufacturer last summer, and if they must advertise themselves let them have their hats stamped with the legend—not "Higgins's Laundry Soap;" but, "I am a Telegraph Operator, 73."

### Other City Items.

Mr. Henry Van Hoevenbergh has returned from London, where he went to introduce his new printing telegraph system. He was very successful in establishing the system in London for the Central News Association, and sold to the latter the patent right for Great Britain.

Referring to the item in last issue about the Andover operator who can do satisfactory work, although without arms, a correspondent at 14½ Broadway says they have in that office a night man who can send ten thousand words or more of press while sound asleep, and the operators on the line affirm that it comes along at a Gay rate.

The American Rapid continues to thrive. Business is on the increase daily, and we are opening new offices every week. Applications for positions come in from all parts of the country, but very few are accepted. Among the late arrivals are: Miss M. L. Bowditch, W. U.; Miss L. S. Maguire and Messrs. A. B. Cook, A. Krum and J. B. Knapp, A. & P.; Mr. J. S. Krum, A. U., Bridgeport, and C. E. White, A. U., Holyoke. Our "Southern Fast" is in charge of H. J. Malone, "Way East" is worked in good style by F. H. Avery, while Boston Special is in the hands of G. B. Mason, who "turns" out business at the rate of fifteen messages a minute.

BIX.

## PERSONALS.

Owing to the consolidation, Mr. A. D. Skinner, who recently went to Atlanta, has returned to Boston.

The A. & P. office in Atlanta, Ga., has been closed, throwing Manager Turner and Operator Hamilton out of employment.

The seven-months-old infant of Mr. F. A. Patrick, Manager of the Beaumont, Texas, office, died March 7 of congestion of the brain.

Mr. R. P. South, an operator on the Police and Fire Alarm telegraph line, 22nd district station, Philadelphia, died in that city on the 28th ultimo. He had held the position for nine years.

Cloverport, Ky., is boasting of having been the birthplace of many eminent men; among them ex-Senator Flanagan, of Texas; Governor Crittenden, of Missouri; Governor Murray, of Utah; and Dr. Norvin Green, President of the Western Union.

Mr. George W. Shaw, for the past two years manager of the telegraph office at the general offices of the Burlington & Missouri River Railroad, Omaha, Neb., has been transferred to Lincoln as a dispatcher. Mr. J. H. Hill succeeds him as manager.

Stephen Lawrence, manager of the Western Union office at Hudson, N. Y., who died at that place Feb. 26, was 56 years of age. He had charge of that office since it was first opened, about 30 years ago, and was one of the oldest active operators in the State.

Mr. F. T. Clohesey, chief operator A. U. Telegraph Co., Kansas City, Mo., was married Feb. 23, at Bay City, Mich., to Miss Lizzie Fox, of the latter place. The presents were numerous and elegant. During the festivities a telegram was received from Mr. Clohesey's collaborators in Kansas City, wishing the happy couple every happiness.

Mr. E. A. Howe, formerly A. U. night chief at Cincinnati, O., has succeeded J. W. Burton as manager of the A. U. in Atlanta, Ga. Mr. Burton is now with the W. U. at Chattanooga, Tenn. Sid. Stevens, of the Atlanta office, left the business March 1, and Mr. Hamilton, late of the A. & P., has taken his place.

Mr. J. H. Wade, of Cleveland, O., who is well remembered in telegraphic circles, and who within two years has paid \$80,000 for the erection of a building for the Protestant Orphan Asylum of that city, has just paid some \$12,500 additional for improvements made to it, and has authorized the trustees to build a school-house such as is needed, and to draw upon him for the cost.

A Boston correspondent writes: "In a former issue of THE OPERATOR I notice the death of the batteryman at Albany and the statement of his having filled the above position for twenty-three years, thus being the oldest batteryman in the company's service. Allow me to correct this statement in favor of Mr. John Hutchinson, who has been batteryman at the W. U. general office, 109 State street, Boston, for the last twenty-eight years, and is still doing good service there."

There is a little group of well known old-timers on the Denver & Rio Grande Railroad. Ed. Schermerhorn, "Skimmy," is a section hand at Veta Pass, and says: "It's a splendid job." Jack Martin is train dispatcher on the San Juan Division and doing finely. John W. Smith ("Q") is chief operator in superintendent's office at Denver, and Mr. Woodward's right-hand man. Fred Loomis, an "old time operator," but for some time past bookkeeper in the general offices, is now a passenger conductor on the San Juan Division, and looks quite military in his blue coat and brass buttons. Ed. Cuthbert, formerly of the Denver W. U. office, is in charge of the telegraph at treasurer's office at Colorado Springs.

## BORN.

STONE.—On Sunday, March 6, 1881, to Mr. O. M. Stone, Manager A. & P. telegraph office, Chicago, Ill., a daughter.

LEGG.—At Fosland, Ill., Feb. 28, 1881, to H. C. Legg, Agent W., St. L. & P. Ry., and Manager W. U. Tel. Co., a son.

BRADY.—Feb. 27th, 1881, to Mr. J. L. Brady, operator B. & P. R. R. Union depot, Baltimore, Md., a son.

## DIED.

LAWRENCE.—At Hudson, N. Y., on the 26th ult., Stephen Lawrence, manager of the Western Union office at that place.

SOUTH.—At Philadelphia, Feb. 28, 1881, R. P. South, of the Police and Fire Alarm Telegraph.

MARTIN.—March 3, at the residence of her son, Mr. Wm. Martin, head receiver W. U. Tel. Office, Boston, Mrs. Sarah Martin, aged 80 years.



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The necessities of the telegraph business requiring an indestructible insulation, stimulated me to the discovery and perfecting of my compound known as Kerite, which combines the great advantage of durability with perfect insulation.

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There are thousands of miles in use throughout the country, by Fire Alarm and other Telegraph Companies of all our principal cities.

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Constant exposure to the sun and atmospheric changes are the severest tests that can be given it in practical use.

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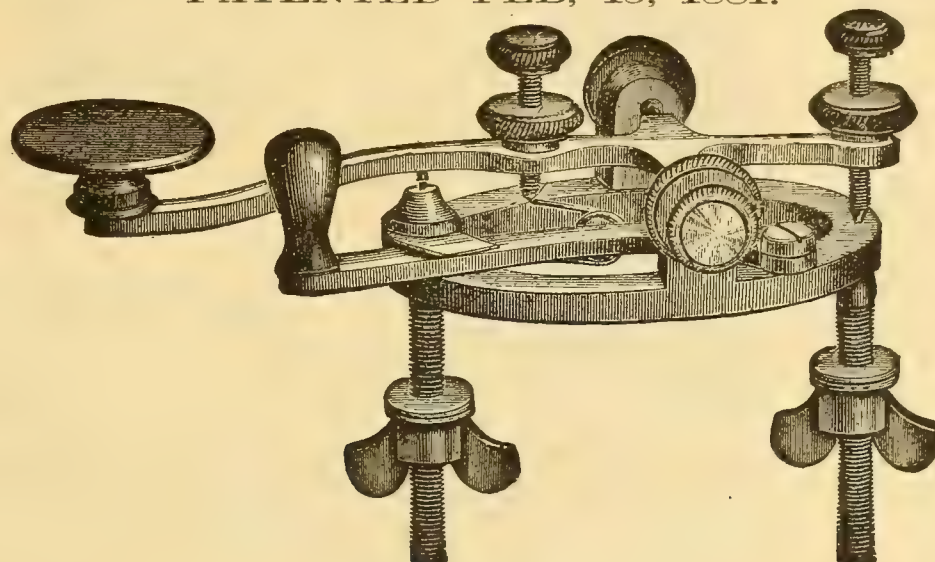
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The size and proportions are such as to make it the most perfect operating key possible to obtain, either for the hand of the skilled and rapid expert or the beginner.

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New York, Dec. 18th, 1880.

J. H. BUNNELL & Co.

Gentlemen:—We have in use in this office, sixty-eight of your Steel Lever Keys.

The general verdict regarding them is, that **THEY ARE THE BEST KEYS EVER PUT ON A DESK.**

Yours truly,

WM. J. DEALY,  
Manager Am. Union Co.'s (Main Office).

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Dear Sirs:—Your instruments meet with much favor on this company's lines and give good satisfaction. The Steel Lever Keys, especially, are much admired by the operators who generally pronounce them *the best*. They at once combine strength and neatness, and are well adapted for easy and rapid sending.

Yours truly,

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There is nothing that I can say that will be too strong in commendation of your New Steel Lever Key. Every one of our operators, without exception, regard it with decided favor, and I am now satisfied that its general use is not only a positive help to operators' efficient labors, but a decided advantage to the general service of the Company. We are using them in preference to all others.

Yours truly,

J. G. CASE,  
City Manager Continental Tel. Co.

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Manager Main Office, 145 Broadway, N. Y.

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Baltimore, Dec. 28th, 1880.

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Gentlemen:—I take pleasure in forwarding to you the accompanying testimonial, voluntarily contributed by the operators in Camden Station Office, to the superior merits of your New Steel Lever Key.

Very truly yours,

CHAS. A. TINKER, Supt.

## BALTIMORE AND OHIO RAILROAD COMPANY.

(Telegraph Department.) December 27, 1880.  
We, the undersigned operators at Camden Station, B. and O. R. R., Baltimore, having fully tested your "New Steel Lever Key," concur in saying, it is the *best*, without any exception, we have ever used.

Respectfully,

CHAS. P. ADAMS, GEO. R. BUNTING, JR.  
E. J. LITTLE, W. E. KING,  
J. W. FERRY, B. F. HARD,  
A. D. FEASEL, GEORGE BOGGS,  
W. W. MOORE, WM. A. LENZ,  
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H. P. BILSON.

And I endorse the above, C. W. CLARVOE, Div. Operator.

From the winner of first prize in the fast sending tournament, New York, August 22, 1880, 500 words in 11 min. 14½ seconds.

"Cable Station No. Sydney, C. B.," Dec. 26, 1880.

Prefer it to any other key I have ever used. It is the general opinion of the operators here that the Steel Lever Key is the best they have ever seen.

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Like the Key very much.

It makes sending easy.  
T. H. ALLEN,  
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Your Key is, without doubt, the best in the world. It is simply perfection.

J. B. COULTER.

Our only desire is to have one of your Keys put on the Pittsburg Quad. Eitymiller works on the Pittsburg end.

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Your Key is, in my opinion, unequalled.

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The finest in the world.

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Best I have ever used.

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Prefer it to any I have ever used.

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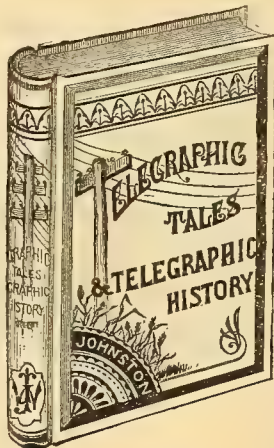


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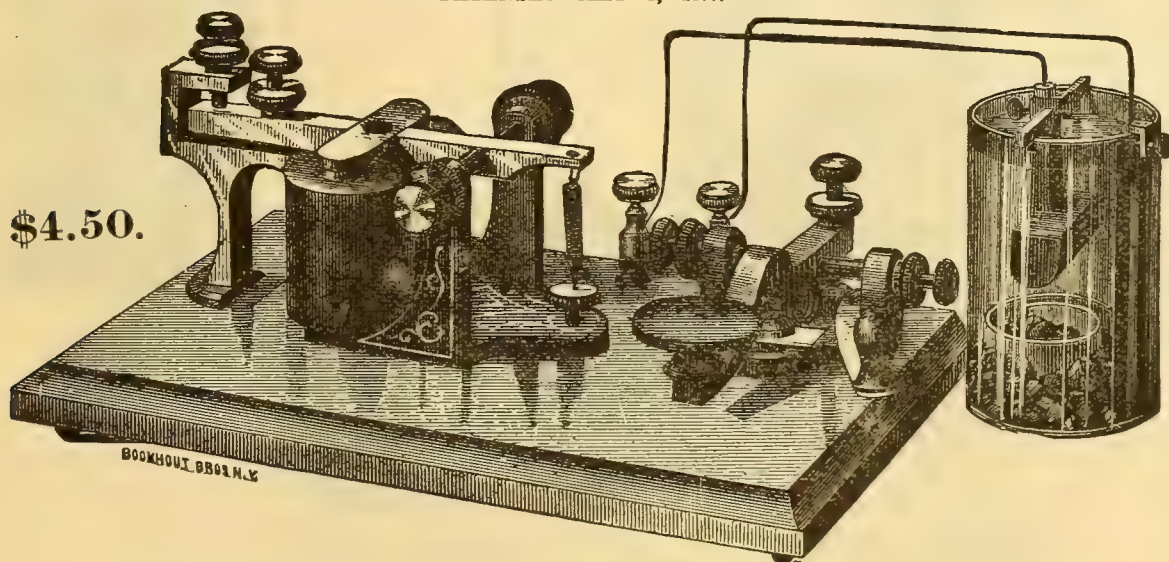
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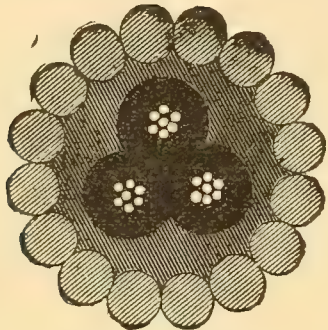


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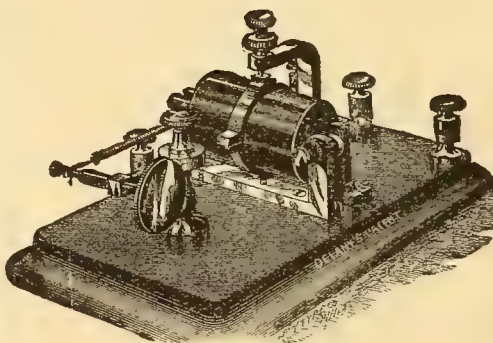
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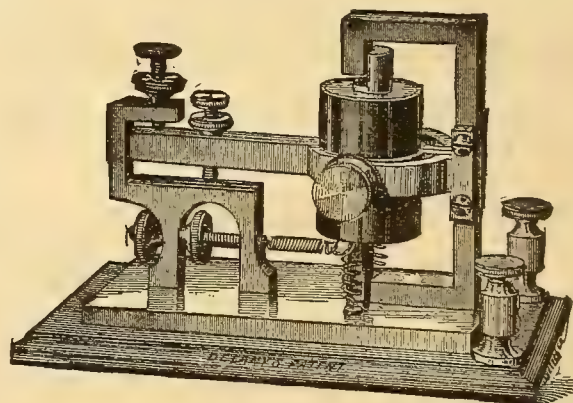
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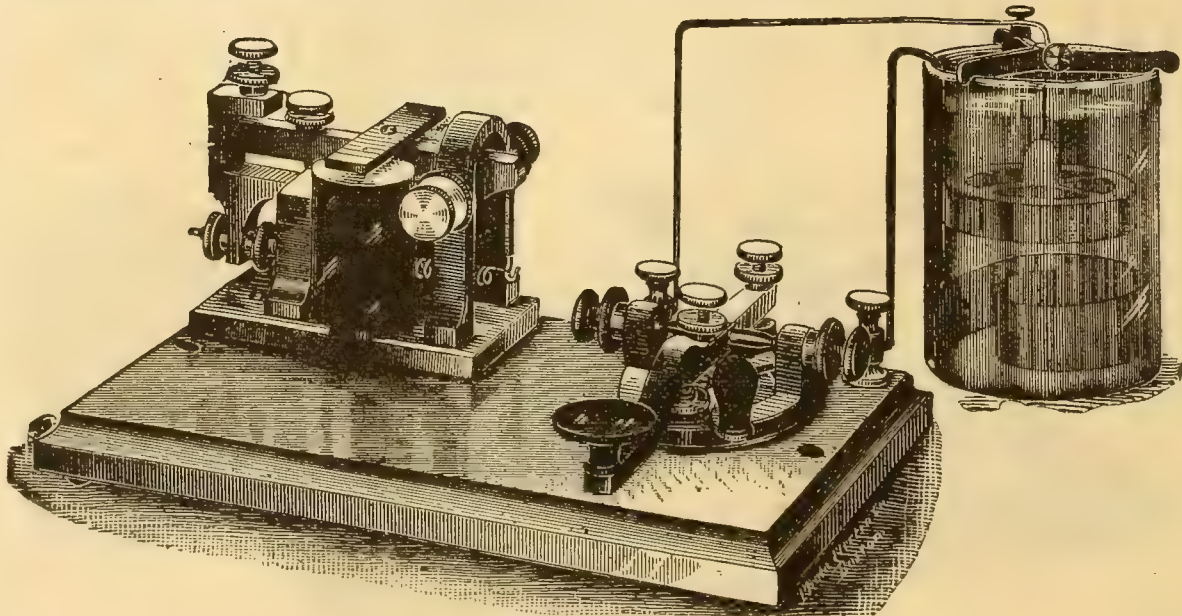
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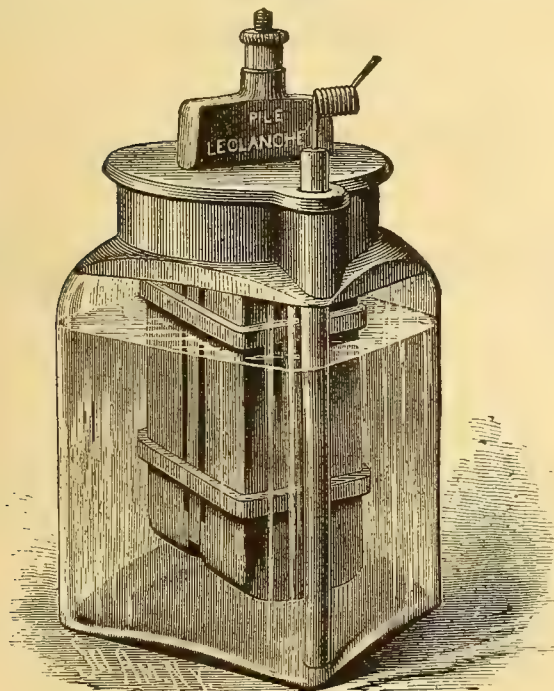
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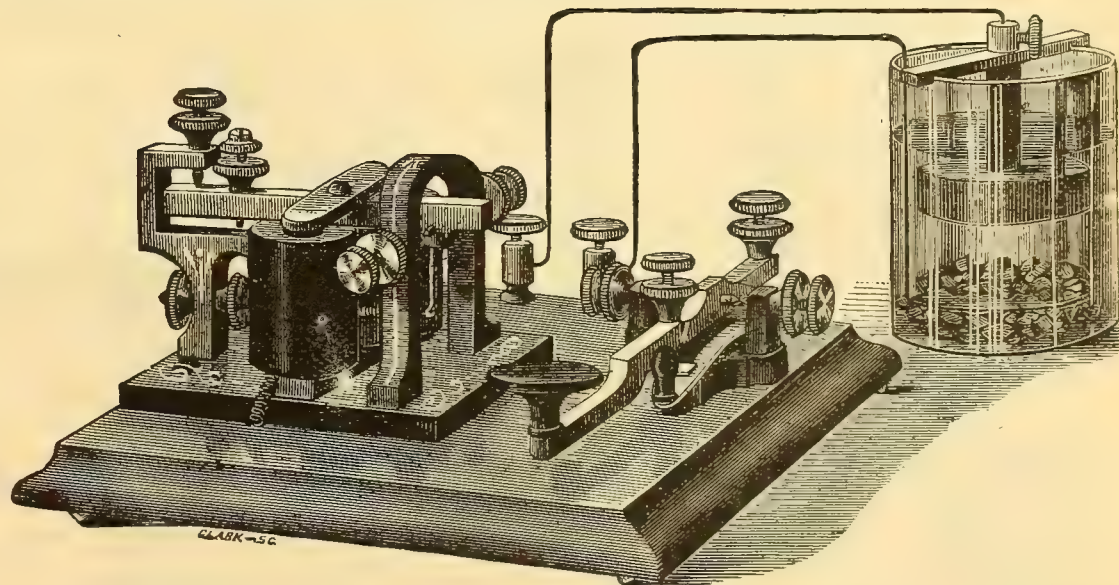
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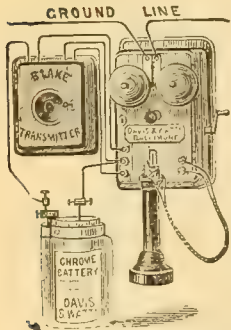
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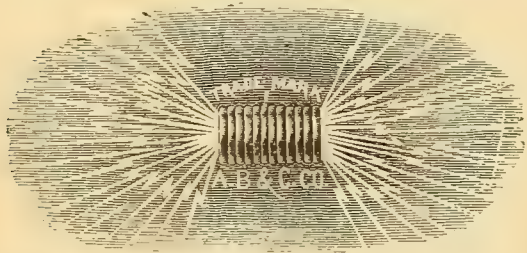
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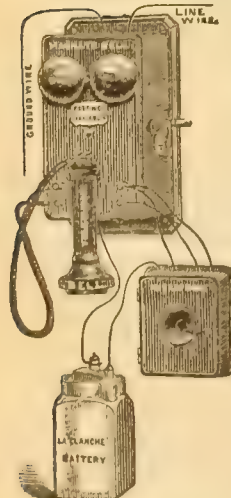
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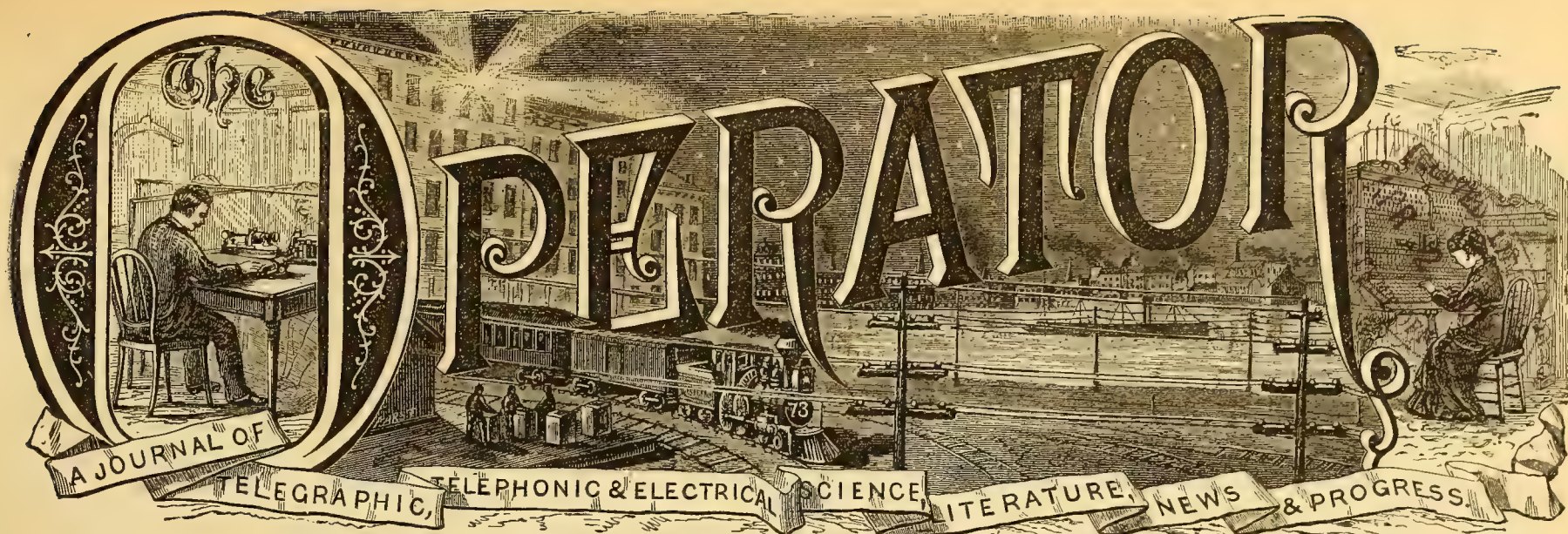
THE METROPOLITAN

**TELEPHONE & TELEGRAPH CO.**

Western Union Building,

NEW YORK.





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NEW YORK, APRIL 1, 1881.

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### THE CABLE'S MUSING.

Far down, where the bed of the ocean  
Is wrapped in its colorless sea,  
Where the blending of calm and commotion  
Comes only as echoes to me,  
Where the coral reefs serve me a pillow,  
And the nautilus' lullaby seems  
Like the murmuring cadence of billow,  
To soften and sweeten my dreams;

I slumber alone in my dwelling,  
Since Vulcan withdrew with his train,  
And through me the nations are telling  
Their throbbings of pleasure and pain;  
And with fairy-winged messengers speeding,  
My being is pierced o'er and o'er,  
While the changes their missions are breeding,  
Are trembling from opposite shore.

Now through the walled cities I'm roving,  
Where hope adds a lustre to fame,  
And tidings of joy to the loving  
Are heard in the absent one's name;  
Or out where the green hills are reaching  
To kiss the blue canopied sky,  
I live while all nature is teaching  
The pleasures her members supply.

Again in the vast crowded city  
I wander midst sorrow and care,  
No rapture, no heart-feeling pity,  
Is voiced in the still atmosphere.  
A youth guides the way to the mountain,  
Then points to a gentler slope,  
And sighs, "There's the grave of life's fountain,  
And there sleep the pleasures of hope."

Thus through me the dreams are revolving,  
Each moment another recalls,  
And the pictures so often dissolving  
Life paints in my cloistered halls.  
And the song in Æolian measures,  
The nautilus' lullaby seems,  
While nations and oceans bring treasures  
To soften and sweeten my dreams.

NEW YORK, March 21, 1881.

FESTUS.

### Our National Portrait Gallery.

#### IV.

PATRICK J. M'MAHON.

Mr. P. J. McMahon, although a truly representative American telegrapher, was born in Ireland, February 4th, 1848. He arrived in Boston with his parents in the autumn of the same year, and has since resided in New England, receiving his education in the Boston public schools. In 1863 young McMahon entered the telegraphic service as a messenger boy for the Vermont and Boston company, and, like most of our leading telegraphers, the messenger

boy, after speedily blossoming forth as an expert operator, shines to-day among the leading spirits of American telegraphy. At the time of the consolidation of the Western Union, American and Vermont and Boston companies, young McMahon was transferred to the Western Union office as clerk. He was soon afterward given a position as operator, and rapidly rose to the

and Stewart, all wonderfully fast senders, and the incomparable operators at the "drop" stations on that line—Baltimore, Philadelphia and New York. All agree that no more even-tempered and skillful operator ever touched a key. Again, in 1872, during the Grant convention, in Philadelphia, and during the Centennial pressure, in 1876, Mr. McMahon won golden opinions



PATRICK J. McMAHON.

front rank in the service, becoming renowned for his splendid "copy," and good work generally. The five years from 1872 to 1877 he spent on the Boston night force—probably one of the most trying telegraphic positions in the country—working the Washington "special" wire. During that time his method of working was the admiration of all who witnessed or heard it, and evoked frequent commendations from Manager Marean and Messrs. Austin, Fred. Marean, Hotchkiss

and laurels for himself both as an expert operator and a cultured gentleman. To-day he is without a superior as a telegraphist, although his wonderful abilities are partly thrown away on the Portland duplex.

Socially, Mr. McMahon is of a kind-hearted and extremely liberal disposition, a great favorite with those who come in contact with him, and is well known throughout the country. He has repeatedly refused tempting offers to go



elsewhere, seeming to believe that Boston is the only good place in the world to live in; and, being married now, he appears determined to remain there during the remainder of his life.

Unlike many telegraphers, Mr. McMahon has remained always close to home, appearing to regard it with all the fervency of his nature. Yet he enjoys travel and recreation in a rational manner, spending his customary month of summer vacation in the wilds of Northeastern Maine, in pursuit of the bounding deer, the stately moose and the silvery salmon. During the autumn and winter months his leisure time is said to be mainly occupied in vain endeavors to convince his office associates of the blessings which are to follow the success of the Greenback party in the nation.

Mr. McMahon has all the outward appearances of being extremely modest and retiring, but those who have heard him relate his wonderful achievements with the rod and rifle in the streams and woods of Maine, far from the correcting influence of the telegraph, with a furlough in his pocket, may possibly doubt the accuracy of this inference.

It is an old saying that what everybody says must be true; so that, in view of the general approbation, we have no fear in putting forth Mr. McMahon as a worthy representative of the very worthy telegraphers of New England.

#### Progress of the Consolidation and the Opposition Thereto.

On March 16 Mr. Rufus Hatch made a new attempt to defeat consolidation, based on the principles involved in the Williams suit, with which all readers of THE OPERATOR must be familiar. Mr. Hatch's new suit is against the three telegraph companies, the Union Trust Company and the directors of the Western Union Company, individually. As a stockholder of the Western Union Company, he says he does not choose to be bound by the acts of the directors and other stockholders of that corporation when such acts are clearly illegal, and he considers the purchase by the Western Union of the property of the other two corporations to have been "premature, erroneous, irregular, illegal and void," in that no authority was given to the directors of the Western Union by the stockholders to enter into the agreement of Jan. 19, and that the majority of the trustees and stockholders of the American Union Company had no authority to sell its property to the Western Union Company on credit, as they did. Finally, Mr. Hatch complains that it is the intention of the Western Union Company to pay a quarterly dividend of  $1\frac{1}{2}$  per cent. upon the capital stock of \$80,000,000, in defiance of the order of the court. He asks a perpetual injunction restraining the four defendant corporations from doing any act under the agreement of Jan. 19, 1881, and that the individual defendants, the Directors of the Western Union, be compelled to pay any losses which have resulted or may result to the company through that agreement. A temporary injunction was granted returnable on the 18th ult.

On that date the case was resumed, and almost interminable legal arguments followed, one side demonstrating to its own satisfaction that Rufus Hatch bought 100 shares of American Union stock one day prior to that on which the agreement of consolidation was entered into by the three telegraph companies, and with full knowledge that the agreement was in contemplation; that his suit was brought for stock-jobbing pur-

poses; that he was inspired by unworthy motives in his litigation, and had said he would withdraw all his opposition to the consolidation of the companies if his American Union stock were bought from him at the price of Western Union; while, on the other hand, the opposing counsel showed that the consolidation was little less than public robbery.

During the progress of this argument Mr. Hatch, on the 19th ult., began a new suit—suit number three. This was brought in the Superior Court, the principal defendants this time being the American Union Telegraph Company and its directors. The Western Union and Atlantic & Pacific companies and the Union Trust Company are joined as defendants. He brings this suit as the owner of 100 shares of American Union stock. His complaint is almost identical with that in the suit in the same court in which he sues as stockholder of the Western Union Company.

In addition to the Hatch suit, the Compagnie Française du Télégraphe de Paris à New York (better known as the French Cable Co.) has renewed the struggle to prevent the consolidation of the land lines. On the 14th ult., this company filed in the United States Circuit Court a re-amended bill of complaint against the Western Union, American Union, and Atlantic & Pacific Telegraph Companies, and the Union Trust Company.

The cable company asks that the consolidation of the land line companies be declared null and void; that the contract of Dec. 18, between the American Union, and Jay Gould and his associates, be also declared null and void; that all leases of wires or transfers of property between the companies be enjoined, and that the American Union be enjoined from discontinuing the interchange and transfer of messages under its original contract with the complainant.

On the 26th ult., "the Williams suit" came up before Judge Speir, on motion for an order to show cause why the defendant companies should not be punished for contempt in violating the injunction order of Judge Sedgwick. Judge Speir named March 30 for hearing argument on the dissolution of the injunction. Motion for contempt was then argued at great length, and upon its conclusion Judge Speir took the papers and reserved his decision.

Meanwhile the enemies of monopoly have not been idle.

The Produce, Cotton and Petroleum exchanges have prepared a circular to be sent to similar organizations throughout the country in relation to the formation of a telegraph company which cannot be bought out or absorbed. It says:

"To this end we advocate the creation of a new telegraph company, whose constitution shall embrace such provisions and conditions as will preclude its consolidation or absorption by any rival interest.

"We propose, therefore, that the voting power on over one-half of its stock shall be permanently vested in a board of trustees, of whom a majority shall be selected from among the presidents of such commercial associations or exchanges as shall be hereafter designated, and who shall be ex-officio members of the said board.

"This plan of trusteeship will, it is believed, prove an effectual barrier against any effort to subvert the company we propose to create by any act or plan alien to its interests, or foreign to the purposes herein set forth.

"It is believed that \$10,000,000 properly expended will give us ultimately as perfect a system of telegraphy as that now represented by \$80,000,000."

In the Pennsylvania Senate, on the 24th ult., the bill to escheat to the Commonwealth telegraph lines which shall consolidate was advanced to a third reading. The character of the measure is fairly indicated by its title: "An act to escheat to the Commonwealth the telegraph lines and property of telegraph corporations, associations and companies which violate the provisions of the Constitution prohibiting the consolidation with, or the holding of a controlling interest in, the stock or bonds of a competing line of telegraph, or the acquisition by purchase, or otherwise, of any other competing line of telegraph." The bill has not yet been considered in the House.

The Legislature of Connecticut has incorporated the "International Construction Company," with somewhat sweeping powers. It proposes to build the international railway to the city of Mexico. The act of incorporation empowers it "to build, construct, enlarge, repair, complete, equip, furnish, and operate, etc., railroads, railroad bridges, telegraph lines, and all necessary appurtenances in any State or Territory of the United States, or in any foreign country," with power to lease other roads or telegraph lines; "to make joint stock with any other corporation; to receive in payment cash, notes, bonds, stocks, or other securities, from any individuals or corporations, and securities issued by any government, state, county, town, or municipal corporation;" to construct or operate roads "by contract or otherwise; to own and operate steamship lines, steamboat lines and ferry-boats; to borrow and loan money, issue its own bonds, etc., at rates of interest not exceeding 8 per cent.; to make advances of money to railroad, telegraph and bridge companies and other corporations, and to contractors and individuals." The capital stock is to be \$1,000,000, liable to be increased to \$10,000,000.

Another incorporation of a national character which is asking, and will, doubtless, obtain a Connecticut charter, is a Rapid Construction Company, having among its incorporators Marshall Jewell, Alexander H. Rice, Benjamin H. Bristow, E. S. Converse and Thomas Wallace. The capital stock is \$1,000,000, with power to increase to \$6,000,000, and organization can be made when \$500,000 has been subscribed and \$50,000 paid in. The company is for the purpose of building and operating telegraph and telephone lines, and its incorporators are chiefly interested in the American Rapid Telegraph Company.

A rumor has gained wide circulation within the past few days, to the effect that Mr. William H. Vanderbilt was about to organize an opposition telegraph company, with a capital of \$25,000,000, and with Gen. Anson Stager, formerly Vice-President of the Western Union, at its head. There is certainly room for such a concern, with so experienced a head as Gen. Stager, not to speak of many other able officers who have recently resigned from the Western Union, but the rumor is strenuously denied in official quarters. President Green, of the Western Union, said that he could confidently deny that there was any foundation for the reports, and, on Monday last, Mr. Cornelius Vanderbilt said that if there was any connection between the report that \$25,000,000 has been raised to start a telegraph company and the fact of Mr. William H. Vanderbilt's resignation from the directory of the Western Union Telegraph Company, he did not know of it.

Meanwhile the consolidated company has been quietly closing its superfluous offices, the reduction of force falling upon the executive department as heavily as upon the working operators.

Many of the operators in this city, however, have been provided with places in the offices of private bankers, who are very generally leasing wires for their exclusive use to Philadelphia and other near-by cities, and in some instances to the far West.

It is said that a delegation of operators called upon Gen. Eckert last Saturday, and requested him to enlighten them as to his intentions in their regard. He answered in a speech in which he said that undoubtedly he would be compelled to make some reductions, but that good operators need have no fear of remaining long out of places in these times. With this very general information they were obliged to be content.

It is pretty certain now that the American Union main office in this city will remain open for the present, but the Atlantic & Pacific building has already been leased to an insurance company, who will occupy it on the 1st of May.

Some cavalymen near the Cape of Good Hope were in a heavy thunderstorm. A flash of lightning flung seventeen horses with their riders to the ground, killing ten men and five horses on the spot. Those who were not killed were all seriously injured, and it was long before animation could be restored in the case of seven of the men. All the bits and stirrup-irons were blackened, and many of the men, though personally uninjured, had their clothing rent by the force of the electric discharge.



### An Able Paper on the Telegraph Monopoly.

Hon. William M. Springer, M. C., has contributed an article to the *North American Review* on "The Telegraph Monopoly," which, on the whole, makes out a strong case against the consolidation. The following is a synopsis of the article:

In the brief space of thirty years, Mr. Springer begins, the telegraphs of the world have grown to nearly half a million miles of line and more than a million miles of wire, or a length equal to forty circuits of the earth.

In the principal governments of the world, except the United States, the telegraph is a part of the postal system, but in this country private corporations construct and control all telegraph lines. The Western Union Telegraph Company, however, has absorbed other companies, until at this time it has the whole telegraphic system of the United States in its exclusive control, with a few unimportant exceptions.

The distinguished writer then traces the history of the Western Union Company, and its growth, step by step, until its capital stock has reached \$80,000,000. He says that the issuing of scrip or stock dividends has constituted one of the chief features of its corporate management. Scrip dividends have been declared to the amount of over four hundred per cent. of its capital at one time. A careful examination of the history of the company will show that, prior to the recent consolidation, of a capital stock nominally amounting to \$41,000,000, over \$26,000,000 was the product of scrip dividends; the remainder, \$15,000,000, represents the money actually invested. But now a nominal capital of \$80,000,000 has been created, and dividends upon this enormous inflation will be exacted from the business of the country for all time to come. The people are naturally concerned as to what may be their rights in the premises. Judging the future by the past, we have no assurance that watering stock and absorbing rival companies are to cease. If there were any ground for hope that the present consolidation would be the last of its kind, we might with some approximation to exactitude compute the result and the effect upon the future business of the country. Eighty million dollars of stock, upon which future dividends are to be paid of at least eight per centum per annum, would require \$6,400,000 annually to supply the demand. The \$20,000,000 actually invested might, properly managed, earn eight per centum per annum, or \$1,600,000. Hence the profit to be exacted from watered stock by this company amounts to \$4,800,000 every year. This tax, thus levied upon and exacted from the business of this country by the Western Union Company, upon this fictitious stock, is equal to a permanent debt of \$150,000,000 of three per centum Government bonds.

Various means of relief have been suggested; some of them deserve to be carefully considered.

*First.* The regulation by the States and by the general government of the rates to be charged for the transmission of messages. *Second.* That Congress should authorize the construction of telegraph lines at the government expense to be operated in connection with the Post-office Department, leaving the lines now owned by corporations to be managed by them in their own way. *Third.* That Congress should aid some private corporation, and form a kind of government co-partnership with it, by means of which, without any appropriation of public funds, individual enterprise could be successfully intrusted with the telegraphic business of the country at greatly reduced rates, without the possibility of expense to the government. *Fourth.* Providing for the purchase of existing lines, and their ownership by the Government, and the operation and extension of the system hereafter under exclusive Government control.

With regard to the latter plan, Mr. Springer intimates that if the necessary appraisal of

the property is exorbitant, it will be impossible to get a bill through Congress to pay the companies their price. It must not be assumed that the Government will be under any obligation to purchase the property at the appraised value. If the appraisers should so far forget the responsibilities of their position as to fix the value at an unreasonable amount, the appraisal would only serve to defeat the purchase of existing lines, and the Government might then proceed to establish lines of its own, and the extension of lines could be prosecuted with as great rapidity as the appropriations made by Congress would authorize. This would force the existing companies into competition with the Government lines, and compel them to adjust their rates according to the Government standard.

He then produces figures to demonstrate that a Government telegraphic system can be made self sustaining at rates materially less than those charged by private companies, alleging in this connection that in England, for the ten years of Government control, the receipts have exceeded the expenditures nearly \$10,000,000, not including the value of the service performed for the Government.

With a Government system in this country, we might reasonably expect a reduction of rates to not exceeding twenty cents for twenty words to any part of the United States and the territories, a large increase in the number of offices, and an enormous increase in the number of messages. How long the people will forego such benefits, and permit the exactions and extortion of private companies, remains to be seen. The commercial and social benefits to the people which would immediately follow increased telegraphic communication at reasonable rates, in a country of the vast extent of our own, can scarcely be estimated. The press of the country is especially interested in securing increased facilities for the transmission of news. Under a Government system, private wires might be rented both to the Associated Press, and to newspaper publishers whose business would justify it, at rates which would merely reimburse the Government for the cost of constructing and maintaining the press wires, in connection with other Government wires upon the same lines. Boards of trade could also secure the separate use of wires connecting the principal cities of the Union; and all classes of people, both for social and business purposes, could obtain telegraph facilities at reasonable rates.

In conclusion, he considers the argument against a Government monopoly which points to the appalling power which such a system would give to the Federal Government, and the certainty that the telegraph would then be used as an engine of political oppression. Mr. Springer thinks that these evils could be counteracted by providing a Government system so carefully framed as not only to secure a telegraphic service conducted upon strictly business principles, but also to free the postal service from the control of politicians, and place the whole business under non-partisan management, free from the exigencies of party.

### Gray's Harmonic System.

At the regular semi-monthly meeting of the New York Electrical Society, on Wednesday evening, March 16, the society accepted the offer of the trustees of the Cooper Union and agreed in future to meet at the Geographical room of the Cooper Union, on the first and third Thursdays in each month (instead of the first and third Wednesdays as previously decided upon). The Cooper Union very generously gives the society the use of this room two evenings a month at the bare cost of lighting.

The routine business having been disposed of, Mr. F. W. Cushing, who was one of the most active in the organization of the society, delivered an interesting lecture on Gray's Harmonic System, of which the following is a very full synopsis:

Before attempting a description of Gray's Harmonic Telegraph, which, as its name implies, has much to do with the phenomenon of sound, a few words on the simpler laws of acoustics will not be out of place.

If two bodies are brought suddenly together, every ear in the room receives a shock, to which the name of sound is given. The molecules composing the bodies are set into vibration, and the vibrations, acting upon the air with which they are in contact, produce air waves which travel out in all directions and finally reach the ear, producing upon the mind the sensation which we call sound. If a body is caused to vibrate, each vibration sends out an air wave, and a continuous sound, called a tone, is produced. When these vibrations are slow the waves are comparatively far apart, and the tone is a low one. When they are rapid the waves are closer together, and the tone is higher. Every body that can be made to vibrate has its fundamental tone; that is to say, it can move just so fast and no faster. The amplitude of its vibrations may be made greater, but this will only increase the volume of sound without altering the pitch. As an illustration, take a weight suspended by a piece of string. Move it from its position of rest an inch to the right; when it is released it will swing back to and, having received an impetus from the force of gravity, nearly an inch to the left of its original position. Then move it three inches to the right. When released it will swing nearly three inches to the left. Next time start it from a position a foot to the right, and it will swing nearly a foot to the left. Each of these swings of one, three and twelve inches will occupy precisely the same time, and if the string were a solid body with one end fixed and the other vibrating with an amplitude of one, three or twelve inches, the same number of air waves per second would be sent out in each case and the same note produced, but the volume of sound would be greater with the greater amplitudes.

These air waves are not only recognized by the human ear but by any body having the same fundamental tone that they come in contact with and that is free to vibrate. Professor Gray illustrates this by standing two tuning forks of the same tone near each other and causing one to vibrate for a few moments. Upon raising it, the other fork will be found to be vibrating also. The first wave strikes the nearest prong of the second fork and pushes it a little out of place, when its elasticity carries it back to and a little beyond its original position just in time to meet the second wave, when the former operation is repeated and the vibratory motion is sustained as long as the air waves last. If, however, the forks have not the same fundamental tone, the second fork will not vibrate, because when the prong of the second fork is displaced by the first air wave and flies back, the second wave comes along either too soon or too late to take advantage of the motion communicated by its predecessor and its effect is lost. Hence, in order to communicate vibrations from one reed to another by means of air waves, both must be tuned to the same note.

In transmitting vibrations through a wire by means of waves of electricity, these general rules must be observed. At the sending end of the wire a reed is set into vibration, and each of its swings is made to send a wave of electricity over the wire. These waves, reaching the receiving end, pass around the cores of an ordinary electro-magnet which has for an armature another reed with the same fundamental tone as the first one. Each pulsation of current magnetizes the soft iron core, which, in turn, attracts the reed and draws it out of place; then the current is broken, the core is demagnetized and the reed, being set free, flies back to, and on account of its elasticity, a little beyond its position of rest, when it is again attracted by another wave of current and the motion repeats itself as long as the current waves last. If the vibrator at the sending end be thrown in and out of circuit, the reed at the receiving end will start and stop exactly in accordance with it, and telegraphic signals may be transmitted, being received in the form of musical notes, a short note forming a dot and a long one a dash.

A very ingenious device has been invented by Professor Gray to reduce these notes again into Morse characters upon an ordinary sounder. A small bar of metal, called a rider, is balanced upon a supporting piece, and has one end resting upon the receiving reed. A light adjusting spring is attached to the rider. One pole of a local circuit, containing a sounder, is attached to the reed and the other pole to the rider. When



the reed vibrates the rider trembles upon it and makes the connection in the local circuit so poor that the sounder opens; the instant the reed stops vibrating, the adjusting screw pulls the rider firmly down upon it, restores the circuit and the sounder closes. So that when the sending key is open, it being so arranged that the vibrator is then to line, the receiving reed is in motion and the receiving sounder is open; close the sending key, the vibrator is thrown out, the receiving reed becomes quiet and the sounder closes, producing the same effect as in sending over a single wire with ordinary Morse apparatus. It may seem incredible that all these arrangements should work so nicely together as to allow of rapid transmission, but at a recent test of five hours between New York and Boston, 376 messages were actually sent over one tone, being an average of over 75 per hour, and probably the fastest time ever made on a Morse circuit where ordinary business was handled.

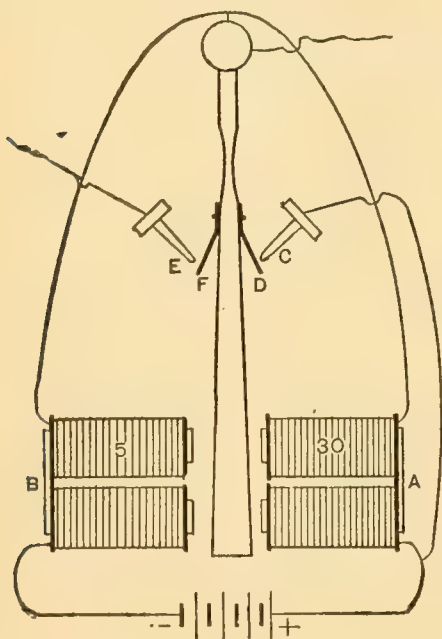
As operated at present, four vibrators with different fundamental tones are placed at the sending end, and four receivers, so tuned that each will equal one of the vibrators in tone at the receiving end of the wire, and the four series of vibrations are transmitted simultaneously, each receiver responding only to its own sender. Thus, we have four messages going in the same direction over one wire, and at the same time. In order to break, resistance is thrown in and out by the opening and closing of a key at the receiving end, which throws a relay that has been adjusted over the tone current at the opposite end out of adjustment and records the signals. All the receiving operators use the same break key without confusion.

Professor Gray has transmitted as many as eight tones at once, but the margin between them was so small and such very delicate adjustment was necessary that, for practical work, he adopted four tones only, and so developed the principle into the present Harmonic System.

The following diagrams and explanations will assist the reader in more thoroughly understanding the principle of the Harmonic System:

#### THE VIBRATOR.

The electro-magnets, *A* and *B*, have coils of 80 and 5 ohms of resistance, respectively. When the current leaves + pole of the battery and magnetizes *A*, the reed is drawn to the right and closes the contact points, *C D*. The current is then shunted around *A*, increasing the power of *B*, and the reed is drawn to the left, closing the contact points, *E F*—which are arranged to send a wave of current to the line at each contact—



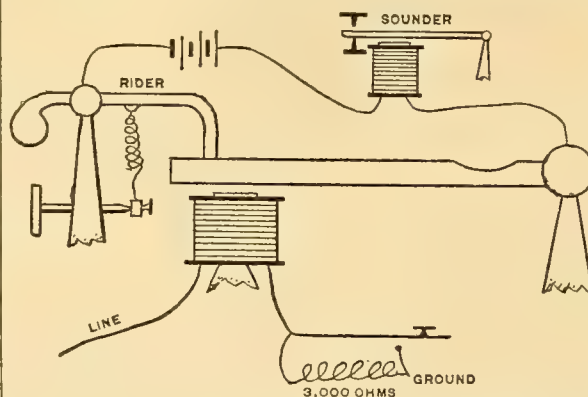
when the former action is repeated and the reed is in a state of vibration. The speed of the vibrations is governed by the fundamental of the reed.

#### RECEIVING APPARATUS.

When the reed in the receiving relay is in a state of vibration, caused by the action of the incoming waves of current, the local circuit, in which is included the reed and rider, becomes so imperfect (caused by the rider's trembling) that the sounder opens. When the reed returns to a

state of rest the contact becomes perfect and the sounder closes.

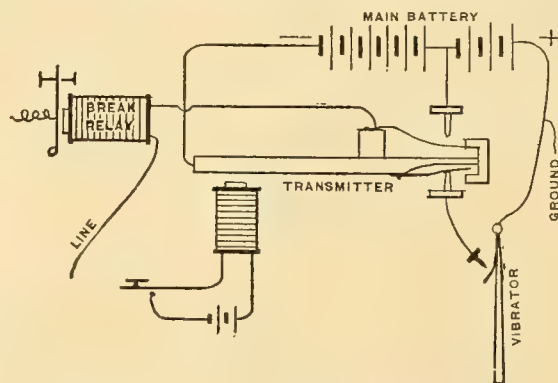
The break key, when not in use, is left open, forcing the current to travel through about 3,000



ohms of resistance (or more, according to the length of the line) to find a ground. When the key is depressed, the current takes a new route of no resistance to ground, and the current is sufficiently increased, by having so much less resistance to encounter, that the magnet of the break relay, at the sending station, overcomes the tension of its armature spring and closes, recording the signals made upon the key at the receiving station.

#### SENDING APPARATUS.

When the reed swings to the left the battery is short-circuited through the transmitter lever,



lower spring and contact points. When to the right the metallic circuit is broken and + pole finds ground at the home, and — pole through the line at the distant station. Instead of actually opening and closing the battery, the action of the vibrator only reduces its strength about 60 per cent., and, as it is necessary that the same amount of current should always be to line to allow of the break relays being adjusted over it, the points are so arranged that when the transmitter is closed, cutting off the vibrator, the upper spring and point come into contact and throw about 40 per cent. of steady current to line. So that, whether the key be open or closed, the same battery strength is always going to line. When the key is open it is being sent in pulsations (too close together to affect a Morse relay), and when the key is closed it is being sent steadily.

#### New Publications.

##### THE BOSTON TELEGRAM.

New England is to be congratulated upon the possession, at last, of a representative telegraphic journal; the only wonder being that, as nearly every other section of our great country has essayed such a publication, Boston—of all places in the world—should have hesitated so long. In a profession like ours, which embraces so much that is intellectual and refined, there is need for some easy method of intercommunication and some cheap vehicle for the general diffusion of electrical knowledge. This has been apparent from the multiplicity of telegraphic journals which have literally "broken out" from time to time all over the country, and which have failed only from a lack of money; thus proving that, from the earliest days of the telegraph, our professional thought has been struggling for expression, while our professional income has not been

ample enough to admit of more than one oracle at a time. As, to use an old illustration, the children of Israel sang the songs of their captivity by the waters of Babylon, and embalmed their history in verse and melody; as the wandering troubadour, at a later date, spread the news from village to village, to the accompaniment of a lute, so have we in modern times sought to record our sorrows and joys, our triumphs and defeats, and our wonderful progress, for the enlightenment and guidance of those who may come after us. The result has been a series of class papers, excellent in themselves; but, to speak by the record, wofully disastrous to their originators.

In olden times—if we may use that expression in connection with so modern an affair as the telegraph—nearly every practical worker had a conviction away down in his telegraphic soul that he could edit a professional newspaper, providing that he could, as Trollope says, command a table and chair, a box of pens and ream or two of paper. The writing of the matter to be published was all right, but it was speedily found that "writing" checks to pay the printer's bill and the stationer's bill was where the real pinch came in. This kind of experience developed the remarkable theory that, as a rule, it took at least three men to run a telegraphic paper—one to do the writing and editing, one to owe all the money, and a third to wind up its affairs. The last named, being the undertaker, by virtue of his high office, is the final and sole representative; number one usually dying exceedingly young, and number two generally emigrating to some distant clime where sheriff's writs are unknown.

But in later years there came a change, and telegraphers demanded reading matter which had something more than the dry legal precision, soberness and monotony of an extended affidavit. The light and springy Jefferson Bricks of the telegraph—to borrow an appropriate name from that insufferable snob and toady, Charles Dickens—found their occupation gone. As might be expected, the demand brought forth an ample supply, and such cultured and entertaining writers as James D. Reid, James N. Ashley, Frank L. Pope, Fred. Grace and Ralph W. Pope, came upon the literary field—men who realized fully that the day had passed when, as with the old system of mining, a man could profit by bringing the ore to market fresh from the mines—gold, mud, rock and all—shoveling it in pell-mell. The profession demanded that the dross be well sifted. It was found necessary to keep the ever-changing record of events as the geographer and explorer traces and maps out for future travelers the course of a river. The fact was recognized that a first-class telegraphic paper could not be made by one man, and that it must be the work of an organization as complete and thorough in its way as a great telegraph company, with its ramifications extending all over and far beyond the continent; that many busy hands and heads must be forever working, collecting, arranging and publishing our contemporary history; formulizing and analyzing it, and generalizing upon it; that the successful editor must never be wrong in his data; that he must possess matured powers, a subtle perception of the needs and necessities of the craft, and a wide knowledge of mankind in general; and that it must all be presented in graceful diction. In answer to this popular craving for a suitable outlet for our overflowing thoughts, New York, Philadelphia, Chicago, Cincinnati, St. Louis and Bolivar (Tenn.) have all issued telegraphic papers from time to time. All have lived their day, written their names in sand and passed away, and of all of them only THE OPERATOR, now in its green old age, remains. Now, since the various sections of the country just mentioned have been duly interested, in a journalistic sense, it is only fair that New Eng-



land should make her maiden effort, which she has lately done, and done well, as she does everything else. The name of the new journal is the *Boston Telegram*.

Its initial number, dated March 1, although it appeared three weeks behind time, and much of its matter was dated January and February—fully comes up otherwise to all the requirements of a first-class telegraphic journal. It is to be published semi-monthly by the Noble Brothers, one of whom—Thomas C. Noble, Jr.—is a well-known writer; and it is edited by Mr. Joseph Nash. The reading matter, albeit a trifle old, is in the best taste, and its typographical appearance is good. The Intelligent Composers' errors, which occur on almost every page, are excusable, inasmuch as there is positively no remedy and no redress; but it is unfortunate that twice in the same article the *Telegram* should speak of "Greil" Eckert, a double dose of an outlandish appellation which will be anything but pleasing to the ex-assistant Secretary of War and the General Eckert who at present holds the telegraphs of America in the hollow of his hand. We hope that "Chops," the *alter ego* of the *Telegram*, will see to it that "Greil" Eckert is treated with more respect.

The *Telegram* is an injection into our peculiar literature, rather than an outgrowth of the same; still, we are glad to see it, since it must arouse all our dormant diligence and energy, and keep us up to the necessary point of extreme accuracy and enterprise; although its extravagant price—ten cents—may militate against its chances of success, and thus by its failure deprive us at an early stage in the proceedings of an incentive to out-do ourselves.

Our Eastern friends have undertaken a great responsibility, and we hope to see them acquit themselves in a manner creditable to American telegraphers. They have sought to create an instrument of tremendous power for good or evil; but it is a two-edged sword. They will have to learn how to guard against the protean axe-grinder, and, at the same time, to accord full honor where honor is due, while the journal must never be used as a vehicle for personalities dictated by private bickerings. They must consecrate body and brain to it and work like slaves for a small recompense, and under such circumstances we predict for them the simple word Success. When that goal is attained their income will be barely as large as William H. Vanderbilt's, or as varied as Jay Gould's, but they will have the proud consciousness of a great work grandly done. We wish the new journal much success. The address is Noble Brothers, Publishers, No. 79 Milk street, Boston, Mass. Subscription price, \$2 per annum.

#### Sparks from the Elevated.

There are employed by the Manhattan R. R. Co. of this city 133 telegraph operators, divided as follows: 20 on the 2d Ave. L.; 53 on the 3d; 40 on the 6th, and 20 on the 9th. Most of them act as ticket agents as well as operators. They are, as a rule, a good class of operators, although having little telegraphic work to perform. Their hours of duty are long and arduous, being from 11 to 15 hours per day, for which they receive the small compensation of from \$1.75 to \$2.35 per day. Our idea would be to diminish the hours and extend the pay.

We note the following changes: 2d Ave. Line.—Mr. P. J. Dunham, transferred from 1st st. South to 65th st. North, and Mr. J. Charlton from 65th st. North to 1st st. South; Mr. J. A. Chadwick, formerly night agent and operator at Franklin Square, resigned March 15. Mr. W. H. Cass, formerly employed as operator on the Northern Central of N. J., takes Mr. Chadwick's place.

3d Ave. Line.—Mr. W. H. Mayer, formerly night agent and operator at 76th st., resigned and goes westward. Mr. F. W. Woehrl, formerly with the N. Y. C. R. R., has been assigned to fill the vacancy.

Mr. A. M. Lane, formerly agent and operator at 125th st., started for Peoria, Ill., on the 23d inst., to take a position on the Peoria & Pekin Union R. R.

Mr. J. P. Cole, formerly agent and operator at Grand st., has been transferred to Grand Central Depot station, morning tour. Mr. Wm. E. Waugh has resigned and gone with the Lehigh Valley

R. R., located at Metuchen, N. J.

6th Ave. Line.—Operator and Train Clerk Mr. J. R. Dickerson, of Rector st., resigned on the 15th ult., and has accepted a position as operator with the W. U. in Jersey City. Mr. W. E. Sperling, formerly of the P. R. R., has been assigned to the vacancy. Mr. C. W. Jackson, formerly operator in train master's office, 129th st., has been appointed chief time clerk of the Transportation Department of this company. C. H. Stebbins, formerly with the N. Y. & N. E. R. R., has accepted a position with this company, and assumes his duties to-day, April 1st. Mr. Wm. M. Hoag, formerly with the N. Y. C. R. R., has recently accepted a position with this company, and has been assigned to the extra list. Mr. Henry S. Smith, who is now employed as operator in the train master's office at 129th st., is again making his usually good copy. Mr. Smith (until his recent appointment) had been out of the business for seven years. Mr. S. S. Ketchum, formerly with the W. U., this city, is occupying a position as operator in Supt. Green's office, No. 4 Front st. Mr. W. S. June, formerly operator and ticket agent at 34th st., East River, is now filling a position in Supt. Green's office. We are sorry to hear that Mr. M. E. Wines, agent and operator at 14th st. and 3d ave., is quite ill, having been confined to his room by a severe attack of rheumatism.

#### Improvement in Telephone and Telegraph Lines.

Mr. T. G. Ellsworth, manager of the John street office of the Metropolitan Telephone and Telegraph Company, New York City, has invented an elevated support for telegraph and telephone wires in large cities. From the annexed engraving—for the use of which we are indebted to the *Scientific American*—it will be clearly seen that everything possible has been done to remove all objectionable features, and to add to it a combination of many useful and improved appliances which tend to make the whole structure ornamental to the streets.

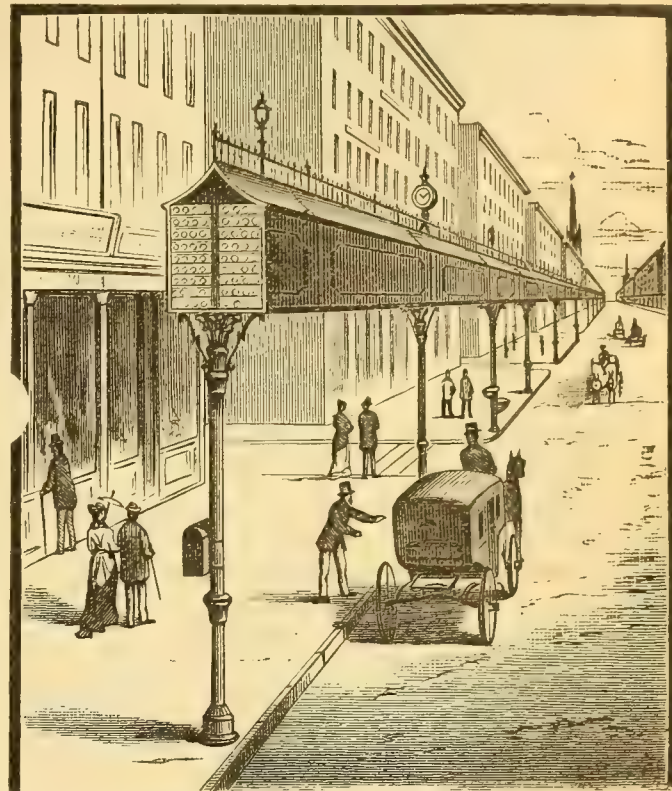
Telegraph wires are fast becoming objectionable to the public, on account of the unsightly poles on the streets and the awkward fixtures on the house-tops; the space they occupy and the cost of construction and maintenance on the part of the different companies, is becoming burdensome.

Since the telephone has been so universally adopted, the wires in many localities form a perfect network. Interruptions have occurred, at the most important part of the day, on thirty or more lines by the breaking of a single wire. The great value of telegraphic and telephonic communication lies in uninterrupted service, and any means that will insure this and cheapen the present rates will increase both the number of telegraph messages and telephone subscribers.

The particular tube shown in the engraving has been selected from many desirable forms to illustrate this invention. Inside the tube are arranged a number of shelves for supporting the cables, which are marked at a suitable distance by the number of each being woven in the covering. At each street crossing is located an electric light, its support being a part of the structure. At proper distances are letter boxes arranged for the attachment of a pneumatic tube for collecting the letters, or they may be collected in the usual way by carriers. Electric clocks are located at desired points, indicating London, Paris, China and New York time. Police time detectors form a part of this system, each policeman to signal to the station at intervals while on beat. By this arrangement a patrolman is in constant communication with the station. Fire-alarm boxes are placed at suitable distances in combination with the improved system. Ambulance boxes are also provided for signaling ambulances, etc. Drinking fountains and the like are distributed at different points. These attachments constitute some of the uses which can be made of the structure. The columns, being hollow, admit of cables passing unseen underground to buildings wherever desired, or special tubes can be arranged for conveyance above ground.

Mr. Ellsworth, the inventor of the above system, was engaged for eight years prior to 1872 in the manufacture of all kinds of telegraph in-

struments. During the great storm of 1874 he was an inspector in the Gold and Stock Telegraph Company, of which General Marshal Leferts was President, and was in charge of line-

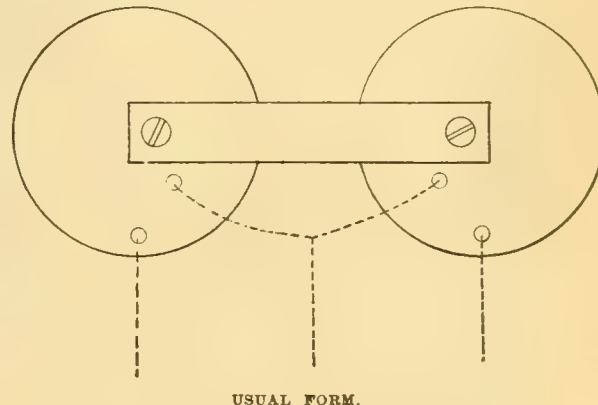


men rebuilding the wires in his district. This invention seems to be one that has suggested itself after a long and varied experience in dealing with city lines.

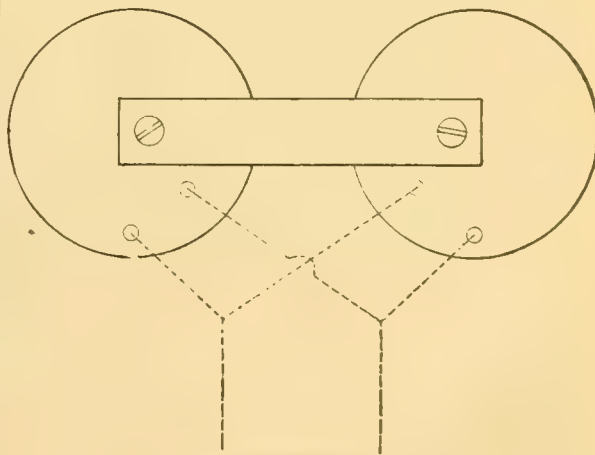
#### A Simple Experiment.

To the Editor of *The Operator*:

Sir: It sometimes happens that young experimenters find that a magnet of high resistance (fine wire) will not work in the particular circuit in which they are trying it. There is a very easy way to make it work; namely, to reduce its resistance one-half. The manner of doing this may be of interest enough to show to the readers of your valuable paper:



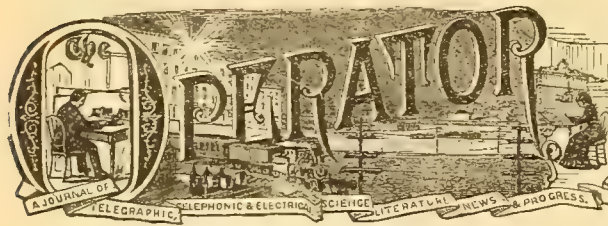
USUAL FORM.



AS CHANGED

I. H. FARNHAM,  
Managing Electrician Bell Telephone Co.  
PORTLAND, Maine, March 3, 1881.





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W. J. JOHNSTON, Editor and Publisher.

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Subscribers desiring their addresses changed, should give the old as well as the new address.

## NOTICE.

Our representative, MR. J. R. CALDER, expects to leave New York for Chicago to-morrow evening, April 2, on the business of this paper. In addition to representing *THE OPERATOR* at the Telephone Convention, Mr. Calder will also during the trip look after our interests among telegraphers and others, in the matter of both subscriptions and advertisements.

## THE COURSE OF THE OPERATOR.

Several of our esteemed correspondents have recently complained, in a rather oracular manner, of the moderate tone pervading our reports of the Consolidation, and one particularly censorious friend flippantly inquires if we have "sold out" to the Western Union. The latter absurdity requires no reply. We have occasionally explained that this journal always was and is now endeavoring to reflect, and not to shape or lead, the intelligent and popular opinion of the telegraphic profession. The record of *THE OPERATOR* must prove this. We have struck at frauds and shams wherever found; we have praised where praise was warrantable; we have opposed oppression until relief came to the oppressed; we have surrendered unlimited space to the widow and the orphan when their cause needed ventilating, and we have bitterly opposed Monopoly until opposition was no longer effective, and remonstrance, being useless, was in danger of descending to the level of rank abuse. We have endeavored to exemplify the operator himself, in the possession of the great common sense qualities—"the courage to fight, the grace to yield or the sense to run away"—each in its proper place. We have deemed it the limit of our duty to find out the truth, and to place it before our readers in a clear and truthful manner, leaving them to draw their own conclusions. This much we have done faithfully and with extreme caution, and by night and by day, with the deepest sense of loyalty and responsibility. That this course has been a true reflex of the thought, opinions and wishes of the vast majority of our intellectual fraternity, we have no reason to doubt. We should not be expected to consider seriously complaints of a purely selfish or emotional nature, written in a petulant spirit, nor to model the operators' organ upon any erratic programme exuded from the glowing fancies of men whose minds are induced

at present by the most powerful incentives to be selfish and unreasonable.

We never lose sight of the established fact that telegraph companies generally are not given to any such amiable weakness as inquiring strictly into the morality of any new scheme which might bring money into their coffers. But when we have it from the highest authority that sweeping reforms are to be inaugurated, and that an era of good will and prosperity is at hand, are we to refuse to do our share toward promoting that end? May we not suspend criticism for a reasonable time, and ascertain definitely whether we are clutching at ropes of sand or not? Our great telegraph bosses, healthy and wealthy, though perhaps not over-wise, appear to have cared very little hitherto for the opinions of the great mass of operators; but they may have read lately of the Roman victor in his chariot, driving over the prostrate bodies of his foes, who was always accompanied by a slave to whisper continually in his ear that he, too, was mortal. Maybe our modern Conquerors were about to listen, and since we know that they are encouraging moderate and fair discussion, why should we not, for a time at least, ride in the chariot with them and whisper the good word?

Times are changing. We have at the present time the rapid building of new lines, the multiplying of the capacity of the old lines by recent inventions and the steady increase in traffic, all finding work for more operators. It may be borne in mind with advantage that all men are not gifted with practical minds, and many are therefore unable to appreciate or make allowance for the many difficulties which present themselves in the government of a great enterprise. Reforms need time, great patience and forbearance on the part of all concerned and gradually liberal methods. All good things cannot be obtained in a day. That is a good doctrine which teaches us to treat all our enemies as if they might one day be friends, and all our friends as if they might one day be enemies. A kind word goes a long way; it is the curse that makes the chasm. Of all men in the world, telegraph operators can least afford to encourage the outrageous doctrine that "they should take who have the power, and they should keep who can."

If, then, *THE OPERATOR* has not truly reflected the sentiment of the majority of our profession, we should like to hear from our brethren on that point. Meanwhile, *THE OPERATOR* will do nothing to mar a good understanding between employer and employé, never forgetting that the more fruitful we make the ground in the Spring the greater will be the harvest in the Autumn. We believe that dissension can do no good at present, and that the best interests of the profession are to be served now by patience and toleration, counseled by operators ripe in sober manhood; a due respect for vested rights and a strict observance of the ordinary rules of fair play. The Consolidation is inevitable—we can't kick against that—and, if there is anything in human promises, the lot of operators ought to be no worse through it.

THE 10th inst. is an anniversary which, like that of the Battle of New Orleans, teaches what a great advantage the telegraph is as a life-saving power in war time. Sixty-seven years ago, March 30, 1814, Paris capitulated, and on the following day the allied armies entered the city; Bonaparte announced his willingness to abdicate

and retired to Fontainebleau; a provisional government was established, with Talleyrand at its head; and, in short, the Napoleonic wars were at an end—or should have been. But there was no telegraph in those days to carry the news instantly to the vast opposing armies in the South, so that they remained in ignorance of the turn of events, and ten days afterward—Easter Sunday, April 10, 1814—while the mounted couriers were still speeding toward the Spanish frontier, there came the shock of battle between the armies under Soult and Wellington, and 10,000—the French say 20,000—men were unnecessarily slain on the field of Toulouse. Nowadays, when the world is meshed with a million miles of telegraph wire, there can be no useless battle fought weeks after peace has been declared.

On the other hand it may be possible that the telegraph has its drawbacks. Mr. Charles Francis Adams has said that if there had been a telegraph cable under the Atlantic Ocean in 1863 war between the United States and England would have been inevitable. After the Federal marines had boarded the English steamer *Trent* and taken off the Confederate commissioners, and Lord Palmerston had sent the Guards to Canada with their bands playing "I'm off to Charleston," the interval of twenty days necessary to get a dispatch from Washington to London and return gave time for the heated passions of both nations to cool and for salutary reflections on both sides.

ABOUT four years ago this journal published a brief account, written by "Werner," of a West Philadelphia superintendent being struck by lightning; of the bolt having taken him squarely on the head, knocking him down, and of his subsequently explaining apologetically that he had been sick for two weeks, else he would not have displayed so much weakness. It was an English journal that copied that paragraph in all earnestness, characterizing it as "wonderful tenacity of life." This may explain why our esteemed scientific contemporary, the *Electrician*, in reviewing "Tales and History," is lost in Cimmerian darkness with regard to the humor therein; and, while our able contemporary is good enough to acknowledge much merit in the work, it cannot refrain from observing in its own Addisonian style that "we stolid Britains are sometimes inclined to wonder at the ease with which our cousins allow themselves to be amused." We have a great deal of respect generally for the flag that has braved a thousand years, the battle and the breeze, and much admiration for the enterprise and tact displayed by the *Electrician* in particular; but when it comes down to appreciating the fine point of a random joke, we must say that it requires a copious supply of explanatory footnotes to satisfy our jolly cousins. To aid in a better appreciation of the work, we reprint to-day two intelligent opinions of the "funny" part of "Tales and History"—one from the New York *Sun*, representing the most critical and widely circulated daily paper on this continent, and the other from the London *Design and Work*, representing the brains of England—or as little of it as is not engaged in editing the *Electrician*.

THE article by Congressman William M. Springer, of which we reprint a full synopsis on another page, is as elaborate and able a showing as can be made against the present telegraphic monopoly, and is well worthy of the attention of our readers. Mr. Springer's statement of the wholesale manner in which Western Union



stock has been "watered," and the tremendous tax on the business interests of the country which will be necessary to pay a dividend of eight per cent. on the increased capital, is a striking one; although his estimate of the present value of the telegraphic plant (\$20,000,000) is far too low, when we consider the right of way and other privileges bought and paid for, and the quadruplex, Page and other patents held by the Western Union. We rather regret that so eminent a statesman should descend to such common stock phrases as "corporate greed," in speaking of the natural race for wealth inherent in our people, and that he should complain in a communistic spirit that "two of the directors of the (W. U.) company are reputed to be worth two hundred million dollars"—a fact which can concern no honest man, except, possibly, the expectant heirs of the directors in question. Mr. Springer is solid on the postal telegraphy scheme, so far as its removal from political influence is concerned, and if it were possible to have a government monopoly based upon his idea we can see very little cause for regret at parting with an evidently odious private monopoly. We are sorry that we have not the space to reprint Mr. Springer's article in full.

THERE is a paper published in Ohio, in the interest of a certain telegraph "college," and, as the greater part of its admirable reading matter is clipped bodily from THE OPERATOR, it presents a very fine appearance. But in that part of its news which is not clipped from THE OPERATOR there is a wonderful absence of grammar and truth. In the latter respect we have to object to its sweeping statement that the salaries paid to operators vary from \$40 to \$125 per month; that "the salaries east of the Mississippi River, for night operators in intermediate offices, range from \$40 to \$65 per month, for day operators \$60 to \$75 per month, and that west of the Mississippi the salaries paid are from \$65 to \$80 and \$90 for intermediate offices, the operator in many cases getting the agency for tickets, express companies, etc." If this amateur editor desired to be fair with the students of his college, he would give a correct average of the salaries paid. The Pennsylvania Railroad pays its operators \$29 per month. The United States Government pays firemen in the navy \$29.50 per month. Now, there is an item which, if copied in the *Reporter*, would read like "blank verse" to the simple students at the Oberlin Telegraph College.

WE have a warm word of welcome for the new telegraphic paper, the *Boston Telegram*, published by the Noble Brothers, and which is noticed at greater length in another column. It is an excellent representative of American telegraphic journalism; and, hailing from New England, should speedily make a place for itself in the telegraphic world. Our youthful contemporary will soon discover that the history of telegraphic journalism is full of the misfortunes of and contumely heaped upon its ablest writers and thinkers, but having voluntarily assumed the duty of championing the rights of worthy operators, and of holding the baser element in check, we hope to see our sprightly junior contemporary stand to that duty as the soldier stands to his guns. We promise it our heartiest co-operation in anything looking to the advancement of our profession and hope, for the credit of American telegraphers, to see it maintain the high literary ability of which its initial number gives evidence.

It gives us great pleasure to announce that the amount of the Boyce fund (\$902.69) has been paid to Mrs. Amanda M. Boyce, the widow of the deceased, after a long, weary wait of nearly four years. We take it also as a compliment to THE OPERATOR, since the "managers" of the T. M. B. A., after twice procuring the rejection of the claim, had, two years ago, come out strong for a voluntary payment, and exhausted their energy when the sum of forty-one dollars was raised. Some of those managers have steadily opposed any payment since, and we were pained to observe that our esteemed contemporary, the *Journal of the Telegraph*, did no more than mention the matter in a gingerly manner. When telegraphers owe one thousand dollars, you will not find them offering forty-one dollars, if the matter is properly laid before them. We congratulate the members of the T. M. B. A. on this little act of justice to the family of a dead brother.

It is scarcely fair for Mr. Springer, in his excellent monograph on the Telegraph Monopoly, to take so much pains to show that the average cost of a message in England is only 25 cents, while it is 38 cents in the United States. England is barely larger than the State of Pennsylvania, while our system of telegraphs, in reaching across the continent, traverses 50 degrees of longitude, or about as far as from London to Teheran, in Persia; and, north and south, through 15 degrees of latitude, or as far as from the most southerly part of England to the Arctic circle. From New York to Omaha, which is not half way across the continent, it is further than from London to Rome; so that, in making comparisons, it would only be fair to compare the average rate on a message in the United States with the average rate on a message to any part of Europe, from Ireland to the Ural Mountains, and from the Mediterranean to Archangel.

It seems latterly that no great soul-stirring event can be complete without the ubiquitous telegraph operator coming prominently to the fore. It will be remembered that during the Electoral Commission excitement in 1876-7 one of the chief pacificators was Major E. A. Burke, an old operator from Texas. All eyes are now turned toward South Africa, and here again we find our professional brother acting as chief adviser. Alfred Aylward, a kind of Prime Minister and military counsellor to General Joubert, the great Boer commander, has been recognized as a telegraph operator who was formerly employed at Dublin. Hard luck seems to squeeze the telegraphers pretty tight occasionally, but you hear from them again, sooner or later.

PUTTING up telegraph lines in Senegal appears to be a trifle more hazardous than it was in New Jersey in the palmy days of the American Union, if a recent cable dispatch is correct. The French soldiers built that line to Fouta-Jallon, though with a loss of four officers and nine men killed and nine wounded. The natives, who were probably all armed with Western Union saws, lost an even hundred killed and wounded. If the English telegraphers—the Royal Engineers Telegraph Train—which sailed for Natal recently in the steamer *France*, do half as well in Natal as the French have done in Senegal, the telegraph will be greatly extended in South Africa.

THERE is something so generous, so chivalric, and, withal, so modest, in the private character of Mr. P. J. McMahon that no one can quarrel with the selection for Our National Portrait Gallery for this issue. In his professional capacity

he is too well and favorably known under the pseudonym of "Paddy Mack"—one of those easily mouth'd titles so freely bestowed by irreverent operators on their favorites—to need indorsement by us. Mr. McMahon is a fair example of the vigor and talent which are so rapidly bringing American telegraphy in advance of all the world.

THAT was a mournful story narrated to the Philadelphia Councils last week during a discussion over certain rights to be accorded to "opposition" telegraph companies. It was clearly shown that no less than nineteen telegraph companies have been successively authorized to run wires in that city, each promising a determined competition with the Western Union, and that one after another of these nineteen companies have fallen by the way-side and "consolidated," though their wires still remain.

THE misanthrope who likes to contemplate sad news may find it in our "Personals" to-day. The brief items cover a long tale of mistaken zeal, hard luck and lost hope. THE OPERATOR has nothing but its sincere regrets to offer to the old warriors struck down in the trenches where they have fought so long and so gallantly. To the man who has literally hewn his way through the world, it is hard to be turned back and to commence his excavations again, but to a strong arm and a stout heart there is little, however appalling it may appear, that is utterly impossible.

WE have to return our thanks to the telegraphers of Philadelphia for the cordial manner in which our representative, Mr. J. R. Calder, has been received in their city, and for their great interest in THE OPERATOR, which is evinced in the prompt and cheerful manner in which nearly every operator and telephone man in the good old Quaker City has supported the representative paper of our profession.

As Gray's Harmonic System is just now attracting much attention, by reason of the recent practical experiments with it between New York and Boston, Mr. Cushing's lecture, printed in this issue, deserves careful perusal. The cuts to accompany the lecture, as published, were prepared especially for THE OPERATOR, and are the first that have been made or published of the Harmonic System in its present perfection.

In this issue Messrs. J. H. Bunnell & Co. present a new and interesting page of cuts and descriptions of very handsome combination sets, made up of giant sounders, steel lever keys, sounding relays, etc., adapted for lines from a few feet to 600 miles in length. The prices are remarkably low, while the quality of the instruments is strictly first-class.

THE Chief Signal Officer is to be congratulated upon the efficiency of his bureau, which now feels confident enough to issue two-day forecasts of the weather. The Signal Service is steadily progressing.

OUR telephonic friends, and those interested in the telephone, should not forget that the telephone convention takes place in Chicago on Tuesday next, April 5.

WESTERN UNION stock is quoted at 113½; A. & P. at 47¼, and American Union not quoted. Last issue they were 116½, 48¾ and 80¾ respectively.

OWING to the large amount of interesting matter received for this issue, we find it necessary to issue a twenty-page paper to-day.



## Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

BY T. D. L.

### Q. 100. What is a magneto-electric machine?

A. A magneto-electric machine may be briefly defined as "a contrivance whereby motion is transformed into electricity." They are made in many different forms, and the modifications of the machine are almost as numerous as are those of the voltaic battery. Nearly all may, however, be comprehended in three classes:

First. Those in which the working current is generated by the movement of coils of wire in the vicinity of permanent magnets.

Second. Those in which a comparatively small permanent magnet and armature are made to generate a current which is merely made use of to excite a very large electro-magnet. This is then used to induce a second current, which can be as much stronger than the first as the electro-magnet is more powerful than the permanent magnet.

Third. Those in which the small amount of residual magnetism always present in electro-magnets is utilized to generate a current, which is first used to increase the magnetism of its inducing magnet and thereby its own strength. When the current reaches the required point of strength, a portion is shunted off for use, while another portion may be directed continuously through the coils of the inducing magnet, thereby maintaining its magnetism. The Gramme machine, however, differs in principle from all others, and will be specially described.

### Q. 101. Describe a machine of the first class mentioned.

A. This class of machine is the simplest, and was long the only style in use. A pair of coils of insulated wire, containing soft iron cores connected by a yoke piece (the coils also being connected the same as an electro-magnet), are fixed on a horizontal axis and rapidly revolved in front of the poles of a permanent magnet or series of magnets. The rapid alternate approach and retreat of the coils through the magnetic field of the permanent magnet induces currents in each coil, but in opposite directions.

The wires of the coils must, therefore, be connected together and to the terminal in such a way as to cause the currents induced in one coil to flow in the same direction and time as the currents induced in the other.

When so connected the coils act with each other, and the combined current is reversed but twice in each revolution. For some purposes, such as ringing bells, these reversed currents are used just as they come from the machine; but if the current is required to be continuous, and to flow in the same direction constantly, as it necessarily must when used for lighting and similar purposes, an arrangement called a pole changer or commutator is attached to the axis of rotation and to the terminals of the coils, which brings both currents into the same direction. These latter remarks refer to all magnets or dynamo machines except the Gramme. That machine, by its peculiar construction, furnishes a constant current in one direction.

### Q. 102. What was the first improvement in magneto-machines after the invention of the machine described above?

A. The invention of the Siemens armature. It was proposed in 1857 by Dr. Werner Siemens, and consists of a cylindrical piece of soft iron hollowed out at two sides for the reception of insulated wire wound longitudinally or parallel to its axis. This is fixed on bearings in a magnet cylinder formed by the extension of the poles of the permanent or electro-magnet, which are joined together by brass or copper strips.

The Siemens armature is rapidly revolved within this chamber, and, from its position directly between the poles of the magnet, where the magnetic field is much more intense than in that occupied by the old form of armature, much more powerful currents are produced. The terminals of the wire wound round the armature are led out of the chamber and convey the current to its desired destination.

### Q. 103. Describe a machine of the second class, which illustrates the second great improvement.

A. The machine which may be regarded as the

type of the second class is that of Mr. Henry Wilde, of Manchester, England, who discovered that if the current produced by the revolving armature of a permanent magnet was made to flow through the coils of an electro-magnet, a degree of magnetism much stronger than that of the original magnet was produced by revolving the armature sufficiently fast.

Having made this discovery, it then occurred to him that an electro-magnet so excited might be used to evolve a proportionately large amount of electricity. Making a machine embodying the principle, he discovered that such was the case. The following is a description of the Wilde machine, as patented by him in 1867. A very large electro-magnet of the horseshoe pattern forms the lower and much larger part of the machine, and is fixed with its poles downward. The yoke piece joining the two electro-magnet cores is utilized as a base whereon to place a series of permanent magnets, also with the poles downward.

The permanent magnets are much smaller than the electro-magnet. Both magnets are provided with Siemens armatures, which are rapidly revolved simultaneously by the same power. The armatures rotate in what is called the magnet cylinder.

This is formed by masses of iron attached to the poles of the magnets and kept separate from each other by a brass or copper plate. These are bored out to make a cylindrical cavity.

The upper armature is rotated with a velocity of about 2,400 revolutions per minute, and the current thereby obtained is directed through the coils of the electro-magnet below. These currents maintain the electro-magnet in a state of powerful magnetization, and the currents induced in its revolving armature are much more powerful than those of the exciting magneto-machine, and are utilized in the work done external to the machine. With such a machine an iron rod fifteen inches long and one-fourth of an inch thick was melted.

### Q. 104. Describe generally the machines of the third class, which include the third great improvement.

A. The principle on which the third class of machines is based was first patented by Varley, and was subsequently re-discovered about the same time by Dr. Werner Siemens and by Sir Charles Wheatstone.

The best and most powerful machines now constructed are made on this principle; for instance, those of Ladd, Tisley, Siemens and Alteneck. The principle is also applicable to the Gramme and Brush machines, which in other respects differ from all other machines.

A description of one of the above-mentioned machines will suffice for all, as the principle of all is the same.

Ladd's machine consists of two parallel electro-magnets. A Siemens armature is placed at each end. They are, however, of different sizes. The smaller one is in circuit with the coils of the electro-magnet, and the larger one furnishes the working current. The two armatures are revolved simultaneously. The current is at first generated in the coils of the smaller armature by the residual magnetism of the electro-magnets. This armature, as it revolves, sends the currents generated in its coils through the coils of the magnet. The magnetism thus increased magnifies the currents induced in the revolving coils, and at the same time develops powerful currents in the larger armature, thus carrying on the principle of mutual accumulation. The current developed in the larger armature is utilized for the purpose desired.

## Telegraphic Tales and Telegraphic History.

*From the London Design and Work.*

In the United States the employés of the telegraph companies exhibit a good fellowship and devotion to their profession which on this side of the Atlantic, if not existent, is at any rate non-obtrusive. This feeling renders the success of a book like the present an absolute certainty, and our only regret in reading it is, that it is not written in a more cosmopolitan spirit, so as to be equally available and interesting to European readers. An English edition would, in our opinion, prove to be a great success, and would involve very little trouble in the preparation, the author having in that case simply to extend the

third chapter, and slightly modify some of the others. Probably in order to assist in the popular attractiveness of the title of the book, the history of the telegraph is relegated to the second place; but within the book itself it occupies, as it should do, the place of honor, and, notwithstanding the side-splitting mirth of some of the tales, it forms by no means the less interesting portion. The author commences with the pre-electric telegraphs, giving instances where, among uncivilized people, telegraphy by sound and by light was employed. \* \* \* The gradual development of the electric telegraph is carefully traced; and while, as might naturally be expected, the author gives full prominence to the valuable achievements of his countrymen, the labors of Europeans have by no means been overlooked. In fact, we have seldom seen so truly an impartial account of the early history of any great industry or science than has been condensed into these pages. The narration of the introduction of telegraphy into the States is of great interest.

We regret that we cannot find space for more than a few extracts from this exceedingly interesting book. \* \* \* A little fun seasons our daily toil, and the author has, in our opinion, done well to intersperse his narrative with many humorous sketches. Special applications of the telegraph are described, such as its employment in war, and for the regulation of railway traffic, and the volume very aptly concludes with a description of the outgrowths of telegraphy, including the electric light, the telephone, and electric railways.

*From the New York Sun.*

Just now, when the consolidation of the great telegraph lines has attracted so much attention, nothing could be more timely than the popular account of the electric telegraph, published by Mr. W. J. Johnston, under the title of "Telegraphic Tales." The author has chosen an effective and attractive form of exposition, being careful to illustrate the salient features, characteristic incidents, and important improvements of telegraphy by pertinent anecdotes. The result is that the book is decidedly entertaining, while, at the same time, it presents in a systematic and compact form a summary of such technical information as is useful to the general reader, and not unserviceable to the professional operator. It is seldom that a book containing so much substantial and not easily accessible material of a specific kind is commended to a wide audience by a careful and pleasing literary treatment.

In a chapter discussing the duties, qualifications, and acquired dexterities of operators and messengers, the author relates a curious incident which deserves to be noted by physicians and by all students of the phenomena of epilepsy and trance. It appears that in the winter of 1870-71 one of the operators in the Western Union office at Boston had an epileptic fit. His medical attendant spoke to him, chafed him, and made every effort to arouse him, but in vain. Subsequently one of his fellow operators drew a chair up to the bed, and took the patient's hand in his. As he did so he noticed a feeble pressure by the fingers, which pressure presently resolved itself into dots and dashes, faintly communicating to the tactile sense the words, "W-h-a-t d-o-o-c-t-o-r s-a-y a-b-o-u-t m-e?" Asked whether he could hear what was said to him, the patient signified assent by a slight motion with the tips of his fingers, and the result was that his fellow-operator got from the patient enough dots and dashes to describe his feelings to the physician, who was thus enabled to apply the necessary remedies. It is certain that no other method of communicating was possible under the circumstances, since the sufferer from epilepsy, although he could hear, could neither speak nor move any of his muscles except those situated in the digital extremities, and these only with the faintness requisite in electric communication. We concur with the author in concluding from this incident that not only persons in a trance, but those in a dying condition, would be able, if acquainted with telegraphic characters, to make known their thoughts and feelings long after any other means of communication had become impossible.

The extraordinary acuteness of the tactile sense and the precision of the sensations which it forwards to the brain are strikingly demonstrated by another of these telegraphic tales. It



is well known that what are termed first-class operators read messages, not by means of punctures in strips of paper, which are only meant for tyros, but by sound—that is to say, by the clicks of the instrument noted in connection with the varying lengths of the intervals between the taps. Of course, by practice, an operator's ear is rendered intensely sensitive, until it can catch the faintest vibrations or whisperings of his instrument. It would not be supposed, however, that this method of reading messages would suit a deaf man. Nevertheless, a deaf man can accommodate himself to these circumstances. We are told that an employé of the American Telegraph Company in Washington, although he could not hear, was rated as a first-class operator dealing with sounds. He could send and receive dispatches by the sense of feeling. He placed his leg against that of the instrument table, and read by the slight jarring communicated, revising, so to speak, the text of his sensations by keeping his eye fixed on the motions of the instrument itself. We need not point out the interest which this fact has for the advocates of the theory, according to which all the specific senses observed in the higher animals have been evolved by differentiation from the tactile sense.

One of the most amusing things in this volume is the account of a new device alleged to have been hit upon for applying electricity to railroad purposes. It is a contrivance by which the colored person employed as a porter in sleeping cars can be awakened at every station. Heretofore the somnolent tendencies of this employé have proved insuperable, except through the constant intervention of the steam whistle, to which passengers not unreasonably object. It is said that a Western inventor has adapted electricity to the purpose of an alarm signal, in such a way that the colored employé's usefulness is increased at a trifling cost. A wire runs from a battery placed in the engine, under the cars, and is connected with an electric disk in the cushion of the hind seat of the sleeping car, where the porter is accustomed to repose. At the moment when the engineer rings the bell on approaching a station, his hand lightly touches the battery, the lightning flashes to the electric disk, and a charge of electricity mending up the spinal column of the African, he is raised toward the roof of the car. When he comes down he is wide awake and ready for business.

#### The Widow's Mite.

To the Editor of The Operator:

SIR: Please extend through the columns of the operators' journal my heartfelt thanks and the thanks of my children to the telegraphers, one and all, for the noble manner in which they have responded to the call for the voluntary payment of the assessment due on my husband's death, three and a half years ago.

Although I have since met with many cruel rebuffs, I have never lost faith in the honor of my late husband's associates, and always believed that they would pay the claim sooner or later. I have sometimes entertained misgivings, but the payment comes to me at a time when I had been feeling most apprehensive for the future, so that it is doubly welcome.

While thanking the telegraphic fraternity in general, I desire especially to recognize the disinterested kindness and knightly courtesy of a few in particular. I have to thank Mr. Heber C. Robinson, of Philadelphia, for his unwavering support throughout; Mr. J. N. Ashley, Secretary of the Association, for his laborious efforts; Mr. Joseph Christie, of Philadelphia, for the patient and intelligent manner in which he arranged, classified and presented to his fellow-workers the voluminous correspondence bearing upon the case, and Mr. W. J. Johnston, of THE OPERATOR, for his persistency and tact in placing my claim before the public.

To Messrs. James D. Reid and James Merrihew, of New York; J. T. Alleyn, of New Orleans, and William Holmes, of New York, a

minority of the members of the Executive Committee of the T. M. B. A., I return my heartfelt thanks for the unanimity with which they indorsed my just claim. AMANDA M. BOYCE.

MOUNT HOLLY, N. J., March 26, 1881.

#### Suit Against the American Rapid.

J. M. Baer, an inventor in telegraphy, has begun a suit in the Supreme Court, this city, for an injunction against the American Rapid Telegraph Company. Thomas Wallace, Daniel H. Craig and Horatio G. Angle are made co-defendants in the suit, although Mr. Angle is not hostile to the plaintiff. Mr. Angle has made an affidavit in which he says that he and the three others, either as the owners or the inventors of telegraph patents, agreed to put their patent-rights together and sell them to the so-called American Rapid Telegraph Company. The company was to issue to them therefor substantially all of its 30,000 shares of stock. The directors, however, Mr. Angle avers, never issued to him and to Mr. Baer the stock belonging to them, but watered the stock from \$3,000,000 up to \$10,000,000, and sold some of it for \$40 a share. Mr. Angle charges that the directors have expended only \$2,500,000 in building three wires from Boston to Washington by way of New York, and in purchasing \$400,000 in apparatus; that they are about to extend the lines by connecting Chicago with Philadelphia and New York by means derived from the sale of the watered stock, but without giving to Messrs. Baer and Angle their shares. They ask, therefore, that a receiver be appointed for the company, and that it be enjoined from carrying out the plans proposed. Decision reserved.

#### Telegraphers' Aid Society Annual Meeting.

The first annual meeting of the Telegraphers' Aid Society was held at the United States Hotel, this city, on Sunday, March 13, and was largely attended. Seven ladies were present.

The reports of the officers show 110 members in good standing and \$419.71 in the treasury, of which \$400 is on deposit in the East River Savings Bank.

The following officers were elected to serve during the next year: President, T. P. Scully; Vice-President, Richmond Smith; Secretary, J. W. Moreland; Treasurer, F. W. Baldwin; Executive Committee, E. C. Cockey, J. B. Sabine, F. W. Cushing, A. T. Creelman, J. K. Calvert, W. B. Waycott, J. W. McLaren; Auditing Committee, Mr. A. S. Downer and Misses K. E. Cummings and F. A. Martin.

A clause was inserted in the constitution limiting the payment of benefits to sick members to six months, but allowing the Executive Committee to extend the limit at their discretion. The amount paid on the death of a member was placed at \$50.

The meeting was harmonious in every respect, and the Society enters on its second year under most favorable auspices.

#### American Exhibit at the Paris Exhibition.

A telegram from Washington states that the Department of State announces that a commission has been organized to represent the United States at the forthcoming electrical exhibition at Paris. The Assistant Secretary of State will for the present act as honorary commissioner general, and Mr. George Walker, the Consul General at Paris, has been requested to act as Executive Commissioner in that city. Mr. George E. Gouraud and Mr. Charles R. Goodwin have also been appointed honorary commissioners. Every effort will be made to secure a creditable exhibition of American progress in electrical appliances. Intending exhibitors should address applications for information, blank forms, etc., to the Assistant Secretary of State, Washington, D. C. No application for space should be sent in later than April 20 next. As Congress has made no appro-

priation for the representation of the United States at this exhibition, exhibitors will have to bear all their own expenses and ship goods to Paris at their own cost and risk.

#### Chicago Notes.

To the Editor of The Operator:

SIR: On March 10th General Eckert and son, and Supt. J. J. Dickey paid us a visit. Their mission here is unknown to your correspondent; probably they were on a tour of inspection, and directing the changes about to take place in the closing of the A. U. and A. & P. offices, and the enlargement of the old W. U. office, in order to take in the wires of the defunct.

On March 17th the "service slips" were abolished *Satis, superque* (enough and more than enough), will likely be the substance of many a hearty comment, particularly from managers who have been intensely annoyed in their efforts to reconcile the seeming inconsistencies "on the face of the returns" with the actual condition and needs of the service. It is to be hoped that the questions thus sought to be reached or proven have been satisfactorily confirmed or denied. Many have regarded the advent of the "service slips" as casting an unkind shadow of distrust upon managers and operators generally, causing some thoughtful ones to feel at least a secret revolt, the spirit of which could not at all enhance the effect of an honest, nor restrain the tendencies of a dishonest, purpose. There are, perhaps, better and not more costly ways to assure the purity of official transactions, and also to stimulate the best operators to mightiest efforts. Evidences of confidence and appreciation, liberal acknowledgements of the value of the services of the tried and worthy, and the careful creation and bestowal of honors where honors are due, would doubtless promote a healthier and more thrifty state of affairs for all concerned. The managers of the great mammoth consolidation may not find a more certain means of contributing to the perpetuity of their glory and power than may be brought forth by a wise consideration and study of the human incentives to earnest endeavors.

Transfers from the A. & P. to W. U.: The brothers Brady, Messrs. Wm. Long, Patterson and Morris; from A. U., Mr. Roberts; all to night force. It is reported that both the A. U. and A. & P. offices are to be finally closed on April 1.

Mr. C. S. Alberts is compelled to retire, on account of ill-health, to his home in Indianapolis. R. W. Ledwith, late report operator for the *Inter-Ocean* private line, has been transferred to Washington, D. C., to act in same capacity there. We all regret his leaving us, and our best wishes attend him. Mr. James Bradley, late night chief at Milwaukee, succeeds him here.

We are sorry to report the recent death of the wife of Mr. Maynard Huyck, and also the infant daughter of Mr. S. O. Bracken, Night Chief Operator W. U.

Although some operating and chiefly talent will be thrown out of employment by the general closing up of offices, most of the boys expect, in some way, to find seats with "the old reliable." At any rate, outsiders need not look this way for openings any time in the immediate future. It is not probably, however, that many of our operators of ability will be forced to idleness very long. The spring and summer business booms will, doubtless, create a demand quite as urgent as was that of last year. Many, too, may find an agreeable and profitable change with some of the new railroad companies, particularly in the vast Southwest, rapidly developing in commercial and mining importance, and where young operators might soon discover prospects ahead that would promise much more than a mere listless existence, if not wealth and honors unthought of now. A late report says that the Southern Pacific Railroad will require operators at the rate of thirty a month for some time to come. Let us trust that, after all the expected changes, may of us will have gravitated to positions of unusual prosperity and happiness. "There is a tide in the affairs of man," etc.

#### Closing Up the A. & P.

To the Editor of The Operator:

SIR: At last the A. & P. is dead, and will soon be resting in the family vault at "195," where so



many of its companions are sleeping, while the corner so long known among telegraphers as "145" is in future to be occupied by an insurance company. Among those who are fortunate enough to be transferred, with other valuable property, to the W. U. building are: W. B. Clum, one of the first to connect a telegraph wire into "145," almost 25 years ago. He does not change with the wind, as his long, gray beard will testify. Lant S. Jones, whose hair is growing silvery in the service, shares the same honor. R. Power, after many years with the opposition, together with E. A. Radigan, A. J. Voyer, J. B. Sabine, B. A. Squires, Miss O'Laughlin and Mrs. Fay, nee Miss Grant, with others, will probably be retained by the "big company." Those who have already received notices of "possibilities" may also share with their companions, although it cannot be definitely known.

Among those who have recently left us are: Miss Minnie Swan, gone to assist in "passing the ckt" with the American Rapid. Miss Mamie Smith joins her.

Mrs. Johnson goes to smile on the brokers. E. L. Marsh, following scripture, goes to do likewise. F. W. Lord has made himself "solid" somewhere, while Geo. S. Williams will go to Troy, N. Y., to watch from afar the gathering mists. T. A. Van Tassel has accepted a position with the Western Union in Newark, N. J., and G. H. Ackerman will talk to us from Paterson, N. J. S. S. Scandlan has joined his fortunes with those of the National Associated Press. There seems to be a sense of sorrow pervading all, at the prospect of an early separation, but it is only visible to one who is sharing in the same feeling, and many times in the future as the leaves of memory are turned will be recalled the pleasant seasons enjoyed at "145," where courtesy seemed to go hand in hand with loyalty, and where, from the president down, nothing but good will has been interchanged. We cheer ourselves with the thought that, although an edict may separate us, yet we are still united in one common band of brotherhood which no power under the bended heavens can scatter.

"30" on A. & P.

FESTUS.

145 Broadway, N. Y., March 28, 1881.

### Richmond (Ind.) Notes.

To the Editor of The Operator:

SIR: The A. & P. and A. U. offices having been closed, all Atlantic and Pacific and American Union wires have been run into the Western Union main office. Richmond can now boast of forty-eight main line wires and one city cable, and has fifteen sets of instruments in constant use. At present the force consists of Z. P. Hotchkiss as manager; C. C. Perry (formerly manager American Union), bookkeeper; E. E. Fulton, operator at main office; G. M. Samuels, operator depot branch office; James Carr, operator at Hoosier Drill Works. W. L. Hibbard, manager telephone, takes C. N. D.'s at Board of Trade. F. W. Samuels has left us to accept a more lucrative position at Indianapolis. Frank has been working here for the last seven or eight years; he is a first-class operator, and Richmond will miss a good man in him. At the P., C. & St. L. Railway office, J. W. Fiafrock is chief train dispatcher, with J. H. McAlpine, first; T. Reynolds, second, and Col. E. E. Quick, third assistants; John B. Trindle, Bent Boyer and C. C. Longsdorff, day operators; Frank Duel, night operator; W. S. Brewer, Jr., operator P. H. freight-house. At C., R. & C. Railway office, J. W. Lawson is day operator; and Will Glant is the "owl." As G., R. & I. Railway office, John Olds is on duty days, and F. R. Wires nights.

C. H. Hotchkiss (nephew to the W. U. Manager), has started a telegraph "college" in this city. It has been running about six weeks. He started in a flourishing style with five would-be learners, but his class now numbers only three. Mr. H. is advertising for a "few more students to learn operating." A few days since a young fellow (evidently from the country), who was contemplating sacrificing himself for the "Telegraph Institute's" pecuniary benefit, asked me what I thought about it. I told him my valuable advice to him would be to go to school a while longer before he attempted to learn telegraphy, whereupon he very innocently inquired: "Do you have to know anything about telegraphy to be an operator?" "N. M. in."

## TELEPHONE DEPARTMENT.

"Buzzing a telephone" is the latest slang phrase.

The telephone has developed an entirely new school of Hello-cution.

Paris proposes to establish a system of police telephonic stations, on the Chicago plan.

Dr. Cornelius Herz claims to be able to entirely discard the principle of magnetism in telephony.

If Adam could have had a telephone in the Garden of Eden, it would have been "Halloo! Eve" the most of the time.

Mr. James Elverson, the publisher of *Saturday Night and Golden Days*, and an old operator, is about to erect a new and magnificent building in Philadelphia.

Mr. E. T. Greenleaf, who had charge of the Metropolitan Telephone Co.'s wires in the uptown district, this city, has resigned, and is now with the Edison Electric Light Co.

The English Post-office Department has warned the Dublin corporation that the proposed erection of the telephone wires in that city will be illegal. At the same time the authorities intimate that they are prepared to do the work.

Mr. J. H. Emerick, Central Office Inspector, Metropolitan Telephone and Telegraph Co., this city, has resigned to accept a position with the Mutual Union Telegraph Co. Mr. J. H. Hingle, Manager Supply Dept., same company, has resigned, and goes with the Mutual District Messenger Company.

Mr. C. H. Walton, formerly manager of the Telephone Exchange, at 82 Nassau street, this city, and more recently of the Exchange, at 97 Spring street, has been transferred to Elizabeth, N. J., as manager of the telephone business and superintendent of the fire alarm telegraph. He and other gentlemen of Elizabeth are about organizing a local telephone company, to control valuable territory in New Jersey. The new company will make Elizabeth their headquarters.

The convention of the National Telephone Exchange Association will be held at the Grand Pacific Hotel, Chicago, commencing Tuesday, April 9. The committee has only been able to arrange for reduced rates of fare by one railroad line, that of the Erie & Chicago. Round trip tickets from New York, via the Erie Railway, can be procured through Mr. M. W. Doran, of the Metropolitan T. & T. Co., at \$25 each. Delegates can also have ordinary rooms at the Grand Pacific Hotel at \$3 per day. The convention will be important from the fact that all standing committees, of whom thirteen were appointed at the Niagara Falls convention, will report at this meeting.

A long series of experiments have been successfully conducted under the patronage of the French government on the telegraphic lines of the State; concluding trials were witnessed, among others, by M. Cochery, Minister of Postal Telegraphy; M. Jules Ferry, Prime Minister; M. Léon Say, President of the Senate; M. Becquerel, and other members of the Academy of Sciences, and other members, senators, deputies and a great number of engineers. One of the most extraordinary experiments was the transmission of speech on a single wire from Tours to Brest, on a wire passing through Paris, the length of which exceeded eight hundred miles. One single Leclanché element was the sole battery in use.

If growth be an indication of business prosperity, the Bell Telephone Exchange in Portland, Me., must be flourishing. Since the present company took charge of the exchange in April last, they have increased the list of subscribers from 170 to 400. The exchange has recently adopted the plan in use in large exchanges, of calling by numbers instead of name. The amount of business done is from 3,000 to 3,500 communications daily. Mr. I. H. Farnham, managing electrician, has charge of the operating room, with Mr. John E. Tierney assistant. The operators are Messrs. Waldron, Smith, Mahoney, Cooper, Folsom, Burnes and Mike Devine, night owl. The ladies' list is Misses Facey, Wiggins and Seevey. It is stated that Mr. Dan Smith has the greatest record in switching.

For a short time past there has been "a telephone difficulty," as the papers term it, down in Washington. The persons whose houses and

places are connected with the telephone exchange complain that the prices are too high even for good service, and that the service has been extremely bad. Gradually, many of these people have grown weary of answering wrong calls, or failing to get responses to their own calls, and of the vexation of spirit which the invention causes by its bitches, delays and jangling errors. On the 21st ult., three hundred of the six hundred subscribers held a meeting and resolved to withdraw their patronage on April 1, and until the company and the association's Executive Committee agree upon a schedule of rates. Another meeting will be held to consider the advisability of removing the wires of the company from all buildings controlled by members. The price of the use of the telephone and the Exchange was before the revolt \$46 a year. The members not only object to the proposed new rates, but also ask that the old rates be reduced. The company asserts that it cannot carry on business at the old rates without loss.

## DASHES HERE AND THERE.

Signal service stations are to be established at six points in Alaska.

It is reported that the Russian authorities used an electric battery to extract a full confession from the Czar's assassin.

Since telegraphic messages in Germany have been at the rate of one cent a word they have proved profitable. Before that they were a loss.

A cable dispatch from London says that the cable steamer Faraday, which will be engaged in laying the new Atlantic cable, is under orders to sail at the end of April.

Mr. William H. Vanderbilt, with fifty millions salted away in Government bonds, says he is quite content. Now you're shouting, William; so we would be under similar circumstances.

Dr. Sanford heard so well from his advertisement in our Feb. 15 issue, that he to-day repeats his offer to send a copy of his eighty-page treatise on the liver, prepaid by mail, on application.

The third annual reception and ball of the Erie telegraphers will be held at Paterson, N. J., on Wednesday evening, April 20. The former balls given by the Erie telegraphers have been great successes.

The Standard Silver Company, whose advertisement appears in the present number, is a reliable firm. From a personal examination we can say that the silverware they offer is remarkably good for the price.

The electric light will burn and tan and develop freckles like the summer sun. How popular, says the Philadelphia News, it will be with families who spend the summer season in the back rooms of their houses?

A great offer by a reliable firm—Earrings, Finger Rings, French Diamonds, Amethyst, Garnet, Topaz or Coral, set in Rolled Gold, Solid Settings, only One Dollar. Read advertisement G. W. Pettibone & Co. in this issue.

On the 26th ult. the court in Philadelphia granted a five-day injunction prohibiting the American Rapid from erecting poles on Chestnut street in that city, but this will not prevent them from opening in that city within a few days.

Owing to the unexpectedly large demand for copies of the first numbers of the present year, our reserve supply of the Jan. 15 and Feb. 1 issues has become exhausted, so that we are unable to furnish copies of these numbers to new subscribers.

The manager of the Granby, Que., office has invented an electrical clock, which, he claims, runs as perfectly as any spring clock. After once being regulated, it needs no further setting or other attention, and can be run on two cups of gravity battery.

The Eureka Trick and Novelty Company advertises exceedingly pretty decorated pearl shells in the present number. This company is not unknown to OPERATOR readers and anything they have advertised has always proved to be what they represented it.

An advertisement will be found in this issue of Messrs. E. & F. N. Spon, publishers and importers of scientific books, 446 Broome street, New York. This old-established house publishes or



can furnish the different books on electricity, telegraphy and other scientific subjects.

The *Hamburgh News* states that the Northern Telegraph Company has concluded a contract with the Chinese Government for the construction of a telegraph wire between Shanghai and Tientsin, a distance of about 1,000 English miles. Nine or ten telegraph stations will be opened at the most important points.

The London *Daily News*, in its financial article in its issue of March 16, says: "Anglo-American cable shares are depressed, in consequence of the circulation of the prospectus of a new Atlantic cable company to lay a cheap cable in competition with the existing companies, as well as with Jay Gould's proposed cables."

A remarkable case of death by lightning occurred, March 18, at Florence, S. C. James Best was crossing a field on his farm during a thunder storm and was instantly killed by a stroke of lightning, which tore up the ground whereon the man had stood to so great an extent as to bury him completely from sight at the bottom of a hole several feet deep.

We desire to call attention to the advertisement of Messrs. Moore & Wilson, which appeared in our issue of Feb. 15, in which they agree to mail their charming story paper, *The Cricket on the Hearth*, free for four months to every one who will send them 12 cents to cover postage. This is a rare chance to obtain a host of first-class reading matter for almost nothing.

The contract for the erection of a telegraph line in China provides also that a telegraph school for educating Chinese for the telegraph service in all its branches shall be opened shortly. At the opening of the school there will be thirty pupils, which number will be increased gradually. This will afford a chance for some of the "professors" in our telegraph "colleges" to emigrate to China.

Mr. A. B. Smith advertises the Barron Flexible Key Knob in the present issue. These key knobs had a very extensive sale among telegraphers when advertised before, a short time ago, and the universal indorsements they received were of the most unmistakable character. There is no reason why they should not have an equally large sale now. Every one troubled with telegraphers' paralysis should give them a trial.

The Perfected Type-writer, an advertisement of which will be found in this issue, is already well known to most of our readers. The type-writer is used by all the telegraph and telephone companies, but would doubtless come into more general use in connection with telegraphy if its advantages were better known. Messrs. E. Remington & Sons will send illustrated descriptive circulars free by mail on application.

A dispatch from Vera Cruz says that on Monday, March 28, the cable steamers *Dacia* and *International* began laying from that point the first section of the Central and South American Cable southward to Tehautepec. When they have completed this work they will return to England and take on the cable to be laid on the Pacific Coast from Callao, Peru, to Tehautepec Isthmus, via Panama, Costa Rica, Nicaragua and Guatemala.

A dispatch from Paris, on the 23d ult., says: The Minister of Marine has received a dispatch from the Governor of Senegal, reporting an engagement between 1,500 natives and 150 French infantry, who had been detailed to establish a telegraph line to Fouta-Jallon. After sharp fighting the natives were repulsed, and fled with a loss of 100 killed and wounded. The French lost four officers and nine men killed and nine wounded.

A complete unit of the Royal Engineers' Telegraph Train, says the *Electrician* of the 5th ult., embarked in the steam transport *France*, which sailed the other day for Natal. Two cable wagons were sent out with them, each carrying six reels of telegraph wire under the body of the carriage. As each reel contains half a mile of cable, a single wagon could provide a telegraph three miles long. In addition to this, however, a reserve of wire was taken sufficient for fifty miles of line. In operations in the field it is stated that these troops can take up and lay down a wire as fast as an army advances or retires.

Mr. H. W. Spang, of Reading, Penn., who will be remembered as the efficient superinten-

dent of the P. R. & P. Telegraph lines, has invented a remarkably ingenious automatic railway signal. By his new system a danger signal is always displayed until a locomotive or train approaching the section of track to be protected reaches the circuit closer or breaker, when the electro-magnet will be charged and the danger signal thereby removed from the view of the engineer and a safety signal given to him, provided the rails of the section of track to be protected are not occupied by a locomotive, train or car, a switch is not set for a siding or branch track, a rail is not removed or broken, and cars on a siding do not project too near the main track. Should the rails of the section of the track ahead be occupied by a locomotive, train, car, or pair of wheels, or even by a heavy iron bar, a rail removed or broken, a switch set for a siding, or a car, or cars on siding project too near the main track, the danger signal will remain stationary, thereby indicating to the engineer that something is wrong, and that he shall proceed with caution. Should a safety signal be displayed before the locomotive reaches the circuit closer and breaker, it will indicate that the signal mechanism has stuck, or is not working properly, thereby notifying the engineer to proceed cautiously.

## NEW YORK CITY ITEMS.

### Echoes from 195.

Dr. Osborne has returned from a three months' absence in Southern California.

A Jersey operator is credited with "dig and live" for "digestive," in a message from a Hoboken M. D.

It is the unanimous opinion of the Division Chiefs that all Mr. Lou Weller wants to make him perfect is a few brilliant flashes of silence.

The wife of Mr. John J. Kiernan, President of the Wall Street European and Commercial Telegraphic Agency, died at her residence in Brooklyn, March 26.

Mr. W. F. Bonnell, from the Cincinnati W. U. office, is finding much-needed relief from medical treatment in this city. He fills in several hours per day in the main office.

Mr. Thomas H. O'Reilly, of the Associated Press wire, recently sent 2,437 words in one hour. This is at the rate of 80 messages per hour, allowing 30 words to a message.

All the press circuits have been connected with the Associated Press rooms, up stairs. The agents are thus saved much annoyance, and the operators enjoy what is termed a "soft snap."

The management has concluded to dispense with the services of Mr. Brandell, the "fly" sender. In a parting epistle to a friend, he signified his intention of a hasty departure to Mexico.

As an indication of the way business piles in, Miss Mamie Crough, an office messenger in the main office, one day last week distributed on the Western circuits alone 485 messages in 40 minutes.

W. U. business has increased wonderfully of late, and the A. U. are called upon to transfer all of their spare men to help out, while several have already been permanently transferred from the A. U. to 195.

The city line switch board is presided over by Mr. Fred Cushing. There being a scarcity of first-class lady operators, Mrs. Breck, formerly assistant to the lady manager, has taken a position at a table where good service is required.

A Lockport, N. Y., paper says that Manager M. W. Griffin, of the Western Union office in that city, received the Associated Press reports on March 22, at the rate of 58 words per minute, the sender being Operator Minier in the New York office.

Mr. Lambdin has returned from an extended vacation, or, as he terms it, "from having a three months' conversation with one in whose soul's salvation I am interested." The photographs which he circulated among the ladies were very much admired.

We have worthy men filling the positions of chief at large, wire chief at large and traffic chief at large, and unless some unworthy operators pay more attention to business there will be many filling the less lucrative positions of "operators at large"—outside of the office.

The Board of Aldermen last week authorized the Edison Electric Illuminating Company "to lay tubes, wires, conductors and insulators, and to erect lamp posts in the streets, avenues, parks and public places in this city, for the purpose of conveying, using and supplying electricity or electrical currents for purposes of illumination."

George Cunningham, formerly a clerk in the operating department, but recently employed as operator in the broker's office of Fiske & Hatch, died in this city last week from small pox. A younger brother also died from the same disease a few days later. They were brothers of Harry Cunningham, operator at 195.

The New York Electrical Society meets in the Geographical Lecture Room of the Cooper Union, at 8 P. M., Thursday, April 7. The first lecture will be on "Electrical Measurements with the Wheatstone Bridge," and will be delivered by Mr. George B. Scott, Superintendent of the Gold and Stock Telegraph Company.

The following from a 195 correspondent will, we are sure, be indorsed by all the operators in the W. U. main office: "Whatever else may happen in the way of changes, it is to be hoped that Manager Downer will be left with us. He always strains a point or two in favor of an indigent telegrapher, and in the realms of humanity he is a king among kings."

New York is the objective point of many Western operators recently thrown out of employment, several arriving daily. While there has been a demand for first-class talent at 195, it is being supplied from the N. Y. A. U. and A. & P. offices, so that operators looking for positions would do well to try and provide for themselves away from New York, rather than enter an overcrowded field.

The W. U. athletic games will take place on Thursday, May 19, if the grounds can be had for that day. The arrangements for the games are progressing very favorably, over fifty entries having already been received, and, judging by the subscription list, the medals will be valuable. Several Canadian telegraphic athletes are expected to be on hand to take part, and the committee hopes that other cities will send representatives, as the various games are open to all telegraphers. The entries close on the first of May. Programme of the games and further particulars may be had by applying to the Secretary of Athletic Committee, 195 Broadway.

The abolition of the "operators' service slip" is a blessing for all the good men in the W. U. service who have suffered by having their work, done on light circuits, contrasted with that of poor and unreliable men who happened to be assigned to heavy ones. Gen. Eckert looked into the matter personally, and as soon as it was shown to him that the system was doing an injustice to many of his best operators, he ordered its abolishment. The operators interested unite in thanking the General for this action. Gen. Eckert is doing all he can for those who will be thrown out of employment by the closing of A. U. and A. & P. offices. He is making room in the W. U. for men from the other companies for whom there does not seem to be any place.

### Other City Items.

The routing clerk at 145 won a five-mile race, March 16th, but lost a week in recovering from the strain. The stakes were only a dollar.

Owing to an increase of nearly 65 per cent. in the gas bills of the White Star steamship line (which is attributed to the bad quality of gas), General Agent R. J. Cortis has adopted the United States electric light system for use on Pier No. 52, North River. In addition to using this light on the pier, it is proposed to use it in the holds of the White Star steamers while loading and discharging, thus avoiding the risks and inconvenience of gas or kerosene. Mr. Cortis believes that the saving will be at least \$100 a month, or 33 per cent.

The Mutual District Messenger Co. (Limited), are fitting up executive officers at 29 Murray and 33 Park Place, and will remove from present temporary location early in April. This company last week applied to the Common Council for the right to lay its wires underground throughout the city. If this application is granted, immediate steps will be taken to place their wires underground. A new district office has been fitted up and opened at 950 Broadway. This



office is a new departure in its way, being provided with a ladies' parlor in the rear part of the office.

## PERSONALS.

Mr. F. L. Ames has been elected a director of the Western Union.

Mr. T. A. Edison has just obtained his three hundred and first patent.

J. C. Hinchman, general superintendent of the Western Union in this city, has resigned.

Mr. William B. Gill, assistant superintendent of the Western Union at Philadelphia, has resigned.

Captain Mackintosh, for a quarter of a century foreman of construction in this city, has resigned.

Mr. Charles E. Valentine, a well-known old-time operator, was buried at Oakland, Cal., on Thursday, March 17.

Miss L. Smith, formerly of Austin, Tex., is now manager, and Charles A. Flinn night owl, of the W. U. office at Jacksonville, Tex.

Mr. J. N. Taylor, Chief Clerk in Assistant General Superintendent's office, Met. T. & T. Co., has resigned, to go into mercantile business.

Mr. Warren E. Tice (Ic.), formerly of the W. U., this city, left March 26 to take a position with the American Rapid in Philadelphia, where his parents reside.

Mr. Jay Gould is reported to have given \$25,000 to the fund for General Grant. Mr. W. H. Vanderbilt did likewise. Mr. John Lenhart has not yet subscribed.

Maj. E. O. Brown, at present one of the most successful and popular insurance men in Toledo, O., was formerly manager of the Western Union office at LaFayette, Ind.

Mr. Frank J. Boudreau has resigned his position with U. P. Railway at Rock Springs, Wyo., and accepted a position as operator for the Southern Pacific in Arizona.

Charles F. Wood, Assistant General Superintendent of the Western Union Telegraph Company for New England, has resigned on account of ill-health, and will go abroad.

The Springfield, Mass., *Union* says that up to 4 o'clock P. M. on Monday, March 14, Mr. Geo. G. Ware, of the W. U. Office in that city, received 9,000 words of press report, and up to 6 P. M. 11,700 words.

Mr. Elmer P. Crooker, of Searsport, Maine, has been appointed ticket agent and operator for the Eastern R.R., at Wenham, Mass. He is a boy making a fair start, and goes to Wenham highly recommended.

Any information of the whereabouts of C. S. Kirtland, who, in December, 1879, worked for the Western Union at Bowling Green, Ky., will be thankfully received. Address W. M. Carpenter, Jr., Grand Rapids, Mich.

Mr. John A. Anderson is W. U. manager at Marion, Ind.; Wm. Ash and Mr. McDonough are with the P., C. & St. L. Ry., and jolly Mr. Buzard and Mr. Hamaker with the C., W. & M. Ry. Mr. A. J. Grief is agent and operator for the T., D. & B. Ry.

At the inquest on the body of Conductor Carney, who was killed recently by an accident on the Pan Handle road, the jury, on the 14th ult., returned a verdict fixing the blame on H. A. Foster, the operator. As the verdict said nothing about criminal carelessness, Foster was not arrested.

The Pittsburgh & Lake Erie R. R. is 69 miles long, extending from Pittsburgh to Youngstown, O., and does a first-class business. It has 18 telegraph offices and about 30 operators, all good men. The Superintendent, Mr. Jones, always has a kind word for the boys when he meets them.

If any operator knows the address of John D. Cameron, an operator who worked in Board of Trade, A. & P., Chicago, Milwaukee and St. Louis, a year or two ago, he will confer a favor by communicating with him and his brother, J. A. Cameron, Napanee, Ont., who is dangerously ill and anxious to hear from him.

The C., M. & St. Paul Ry. telegraph line has been kept unusually busy of late, by reason of the snow blockades, and the fact that with the exception of one mail a week

all communication with the towns along its route had to be carried on by telegraph. Mr. H. R. Williams is train master of the road and Mr. E. H. Graves train dispatcher.

Mr. S. A. Muncy, who died at Summerside, P. E. I., March 9th, was an old-time operator. He was a native of Halifax, N. S., but had been in Summerside nearly twenty years. Up to within two years ago, when he resigned to accept the position of agent and operator for the P. E. I. Railway Company, he had been an operator in the Anglo-American Telegraph office.

Mr. W. H. Rinehart, of the Western Union office at Leadville, was married Feb. 23, at Denver, to Miss Kittie Clark. The joyous occasion created a sensation in Denver, and after the ceremony congratulatory telegrams came flowing in from all quarters. The presents were numerous and costly. Mr. Rinehart is deservedly popular in our profession, and we wish him and his bride much happiness.

The *Washington Star*, in speaking about the White House says: "The telegraphic operator is Benjamin F. Montgomery. He is the youngest man in the office, with one exception, and the wittiest. He possesses the adornment of light brown hair and a new growth of auburn beard. He can send and receive as fast as anybody that 'pounds brass.' He has a new set of nickel-plated telegraph instruments, and is as proud of them as of his baby."

Mr. Wm. Gramlich is manager at Carlstadt, N. J.; Mr. J. E. Church, chief operator at Hackensack; Miss Fannie Bogert, manager at Upper Hackensack; Mr. J. F. Bonton at Cherry Valley; Mr. Harrison at River Edge; Mr. Ike Onderdonk at Westwood; Mr. E. B. Shurter (formerly of Kingston, N. Y.) at Hillsdale; Mr. Lew Bogert at Pearl River; Mr. P. Wilber at Nanuet; Mr. Will Thorne at Haverstraw, and Mr. Garry Haring at Stony Point.

On Saturday, March 26, Mr. J. J. S. Wilson, who since 1856 has been superintendent of the Western Union Company at Chicago, telegraphed his resignation of that position to General Eckert, to take effect March 31. On the same day Mr. Wilson's son, Charles Wilson, who for some time has been the electrician in the Chicago office, received notice from New York that his services would no longer be required. These are the first important changes in Chicago following the consolidation.

Mr. W. R. Plum, who has for some time been engaged in writing a history of the U. S. Military Telegraph, has gone to Lamy, New Mexico, to recruit his health, which was badly shattered by reason of overwork. He expects to remain in New Mexico until May, when he hopes to return to Chicago and devote all his attention to the work of finishing the writing of the book. The volume will contain from 500 to 600 pages, and promises to be a very interesting and valuable contribution to telegraphic literature.

READING, Pa.—Mr. Ambrose S. Miller, extra operator, P. R. & P. T. Co., was married, January 6, to Miss Maggie Craig. Their bridal presents were profuse and handsome. On Sunday, January 23, Mr. E. R. Adams, Superintendent's office, same company, was presented with a charming daughter, and on Sunday, February 20, Mr. F. N. Boyer, manager Reading depot office, also with a daughter. Died, March 15, Eugene Hoyt Boyer, aged 2½ years, only son of Mr. J. Harry Boyer, operator at general dispatcher's office.

Mr. Julius Wooten, a well-known operator in the Western Union Telegraph office in this city, left yesterday morning for Tampico, Mexico, where he will take charge of an office to be opened there on his arrival. Mr. Wooten came to Chattanooga from Florida during the scourge of 1878, and since that time, by his dignified bearing, genteel and polished manners, won hosts of friends, and gained great popularity in society. The best wishes of his large circle of friends follow him to his new home.—*Chattanooga (Tenn.) Times*.

Old man Kav put in an appearance at Tenth and Chestnut streets, Philadelphia, one day last week. A correspondent of THE OPERATOR, who passed him on lower floor, says he had a look of utter "brokenupness," and was in a completely demoralized condition. During the day Harry Schotte received the following "old timer"

note from the old man: "Fren Hary—I've jist cum in frum Chicargoo, wher I've ben wurkin' the soap racitt. Cum down stars and bring A quarther An wee wil hav A foine tig. Til Deth. "OLD MAN KAV."

LEADVILLE, COL.—The Western Union office at this place is in charge of Mr. J. A. Hagerlund, manager, with Mr. W. H. Rinehart as assistant manager. The latter, who was married in Denver on the 23d inst., is the pioneer operator of Leadville, having opened the office here when the first line was run into "the camp." Mr. E. B. Beecher, a well-known operator and electrician, is chief operator. Mr. E. T. Ball is day operator, and Messrs. C. A. Batson and W. D. W. Storm are night operators. Mr. Weisse has charge of the branch office at the depot.

The A. & P. and A. U. offices in Bridgeport, Conn., were closed March 18th, the wires and instruments being transferred to the office of the W. U. Co. This large increase of wires crowds the Western Union office very much, it having now 55 wires, with little room to accommodate such a number. It is now no secret that the American Rapid Co. will open an office in Bridgeport April 1, and will occupy the former office of the American Union. Many predict for the "Rapid" a large business, in view of the fact that the office is to be managed by Mr. J. S. Krum, assisted by the former American Union corps.

PORTLAND, ME.—The A. U. and A. & P. have both put up their shutters. Manager Neff, of the A. & P., has left town, and Warren Mitchner, day operator, has left for parts unknown. Manager Preble, of the A. U., is still here, fixing A. U. business. Night operator W. H. Bailey has gone firing on the M. C. R. R.; Charles Stevens, day operator, to Boston. Repairman Johnson, of the A. & P., has started a telegraph school, though in view of the consolidation there would not seem to be a very brilliant prospect for a "school"-taught operator to find employment. Telegraph business here is remarkably good for this season of the year. Mr. M. E. Hayes, day operator W. U. office, has been confined to his house with pneumonia since January, and is now sinking rapidly. M. S.

## BORN.

DODD.—March 25, to C. H. Dodd, Agent and Operator I. C. R. R., Mona, Ia., a daughter.

## MARRIED.

RINEHART—CLARK.—At Denver, Col., Feb. 23, 1881, by Rev. Dr. Moore, W. H. Rinehart, of the Western Union Leadville Office, to Miss Kittie Clark, of Denver.

## DIED.

MUNCY.—March 9th, 1881, at Summerside, P. E. I., Mr. S. A. Muncy, agent and operator, aged 42 years.

**BOOKS.** DESCRIPTIVE CATALOGUE OF SCIENTIFIC Books and Price of any Book on Electricity sent promptly on application.

PATERSON, E. *Electric Signals*. Giving a description of electric bells and their construction, the arrangement of batteries, wires, press buttons, indicators, bells, telegraph instruments, telephone lines, lightning conductors, etc. Fully illustrated. Price, 20 cents.

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GORDON, J. E. H. *Electricity and Magnetism*. In two vols., containing 618 pages, and illustrated by 52 plates and 255 engravings. 8vo., cloth. \$7.

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**EUREKA TRICK AND NOVELTY CO.,**

**39 Ann Street, New York.**

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In order to introduce our goods in every neighborhood in the United States we will forward, all shipping charges prepaid, **ANY FINGER RING OR PAIR OF EAR-RINGS**, as shown in illustrations, provided you cut out this advertisement and send to us with **ONE DOLLAR** on or before **June 30th, 1881**. If you wish we will engrave any name, initial, motto or crest on the inside of rings without extra charge. At the same time we send the article ordered we will mail you a bundle of our catalogues and feel sure that you will be so highly satisfied that you will show your appreciation by distributing our catalogues among your friends and at the same time exhibit goods received from us. You can in this way assist us in selling other goods of standard quality which are manufactured from new and original designs, and which we guarantee to give satisfaction, and if not as represented money will be refunded. Numbers 30 and 37 we furnish in either anythist, garnet or topaz (according to preference which you wish). No. 32 is a band ring, handsomely chased. No. 29 is set with our celebrated French diamond, being finely cut from the whitest stone and very brilliant; in fact we do not hesitate in saying they are the best imitation of the real diamond ever produced, and only experts can detect that they are not. No. 30 has the same setting (French diamond) as the No. 29 ring. No. 38, a beautiful pair of ear-rings, real coral, mounted on diamond chased anchors. **ALL THESE GOODS ARE MADE FROM FOLDED GOLD, AND EACH IS SOLID.** We wish to caution the public against many firms who are advertising cheap and worthless jewelry. Our goods are first-class in every particular, and our object in offering a few styles of our standard goods at the above nominal price is to secure permanent customers for other goods. We can only send out a limited number of these goods at price named, and in order to protect ourselves from jewelers and others ordering in quantities, we will insert this advertisement but only two in this paper hence require you to cut it out and send to us when you order that you may know that you are entitled to the benefit of this offer. Remember, we will not send more than one ring or pair of ear-rings at price named but you can make a selection of either. If more than one article is desired we will supply them at prices given in our Illustrated Catalogue, which we will mail you. Some persons persist in sending more than one dollar, ordering and expecting to receive more than one of the six articles advertised; to all such we must say, you can save us much trouble by sending not more than one dollar and ordering one finger ring or pair of ear-rings, and thus save us the trouble of returning your money when you do not comply with this advertisement. **WE SELL YOU ONE ARTICLE AT THIS REDUCED PRICE MERELY TO INTRODUCE OUR GOODS.** To ascertain the size ring you wear, take a piece of paper and cut it so it will most just around the finger you wish to wear the ring on, sending the slip to us. In ordering, give number of article wanted, and if a finger ring, state what you wish engraved. Money can be sent by Registered Letter, Post Office Money Order, or through the regular mail. We refer to any Bank, Express Company, or reputable firm doing business in this city. Address **G. W. PETTIBONE & CO., 25 Maiden Lane, New York.**

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## Fine Table Silverware almost Given Away!



ONLY  
**\$6.00**  
FOR THE  
ENTIRE SET.

**\$1.50**  
FOR  
ANY ONE  
PIECE.

After years of experimenting, and by a large outlay of capital, we have at last succeeded in the production of Silver-Plated Ware of the most sterling quality, and of the rarest and most elegant designs, at a reduction of fully two-thirds the former cost, and are enabled to place before the public first-class Silver-Plated Ware at prices below the cost of very ordinary china. Silver-Plated Ware has always been considered a luxury which many could not afford, but at the prices at which we are now offering it, it is much cheaper than anything else, as it will last a lifetime. There is hardly anything a lady takes more pride in than her table; and what will add more to the beauty of it than a handsome service of silver? and there is now no excuse for any one to be without it. In order to introduce our ware to the public, for a short time, to sell at our lowest wholesale prices direct to the consumer, thereby saving our patrons the large profits made by the jobber and retailer. Formerly any one of these articles would cost you more than we ask for the entire set, and it is only by manufacturing in immense quantities, and by our new process, that we can afford to sell at the following prices: Upon receipt of **only Six Dollars**, we will send by express, to any address, the five pieces represented in the above illustrations, viz.: No. 1. **SUGAR BOWL**—Exquisite in design and workmanship. No. 2. **CAKE BASKET**—Elegant (new model). No. 3. **DINNER CASTER** (5 bottles), very handsome. No. 4. **BUTTER DISH**—Very recherche design, with patent tray. No. 5. **TEA OR COFFEE POT**—Fire-proof. This ware is all White Metal, pure Coin Silver Plate, new in design and chasing, and warranted. The Tea or Coffee Pot is pure White Metal, silver-plated. It is of full family size, and is made with a patent copper bottom, rendering it perfectly fire-proof. The Butter Dish has the latest patent tray, it is easily kept clean, and will not corrode like the old-fashioned metal trays. The above cuts represent the ware as accurately as possible, but do not do it justice. Remember, we send the entire list of five pieces by express, securely boxed, packed, and guaranteed to reach their destination in perfect condition, upon receipt of **only Six Dollars**; or we will send them C. O. D., provided One Dollar accompanies the order, the same to be deducted from the bill. Or we will send your choice of any one of the five pieces, securely boxed and packed, by express, upon receipt of \$1.50, and you may have the privilege of sending the balance, \$4.50, for the remaining four pieces in the set, after you have received the first. This is a rare opportunity to secure a magnificent set of Silverware. We have established a Salesroom in New York City, at 23 Dey Street, where our goods will be found on exhibition, and if you are in the city we would like to have you call and see them for yourself, or if you have a friend or acquaintance in New York, please ask them to call on us and examine the ware for you. The articles are all full size, as will be seen by the dimensions given above. Do not be deceived by inferior plated ware, as each piece manufactured by us has the **Standard Silver Company** stamped plainly upon it. Any person buying this ware, and not being perfectly satisfied, can return it, and his or her money will be refunded. Remittances made by Post Office Order, Draft on New York (payable to Standard Silver Company), or Registered Letter, at our risk. In ordering, please give your Name, Post Office, County, State, and your nearest Express Office. In writing, mention this paper. Address **P. O. Box 1,882.**

**STANDARD SILVER COMPANY, 23 Dey Street, New York.**

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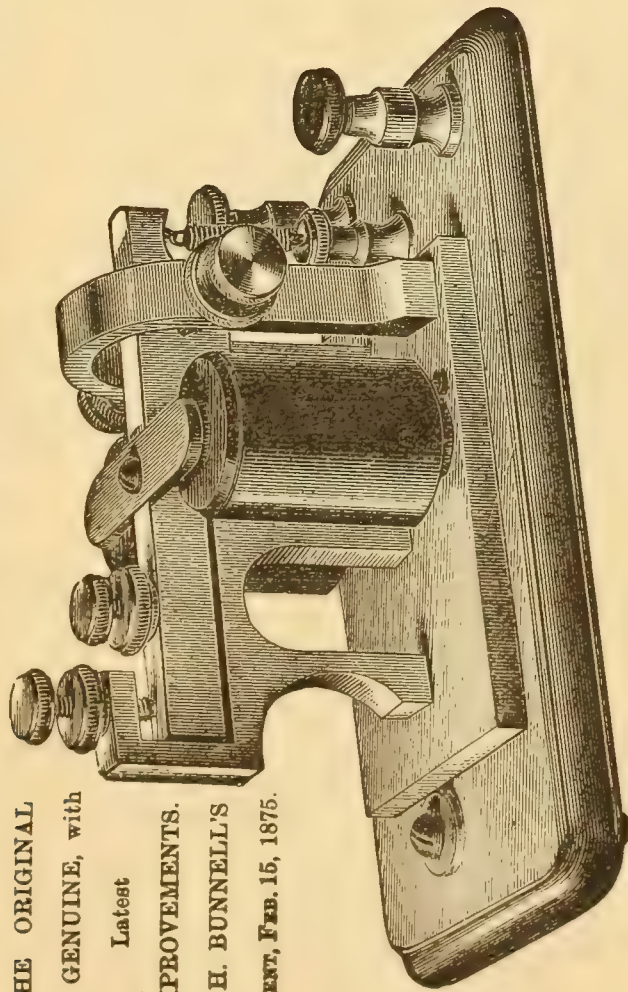
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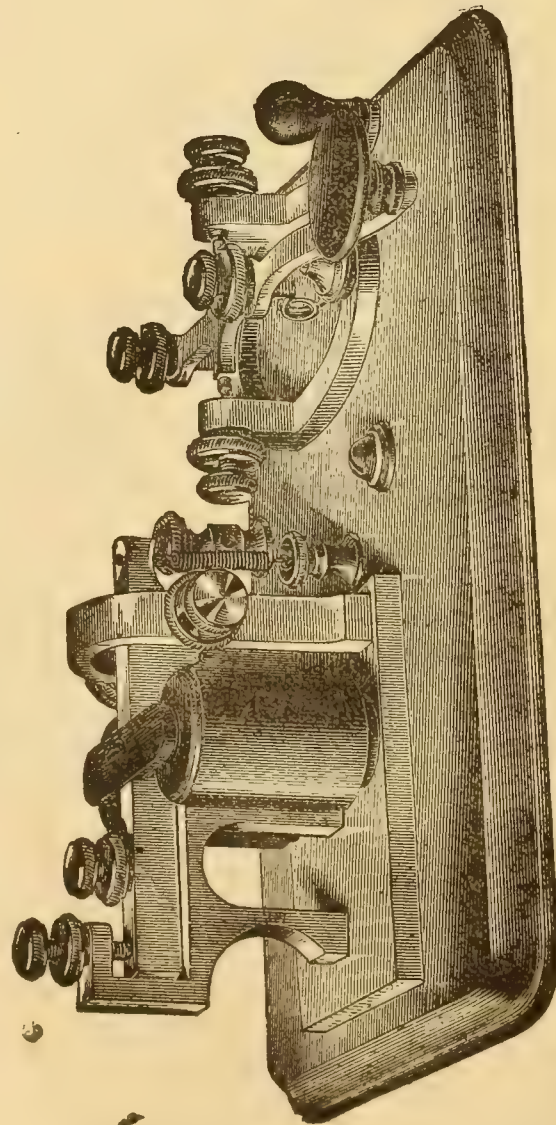
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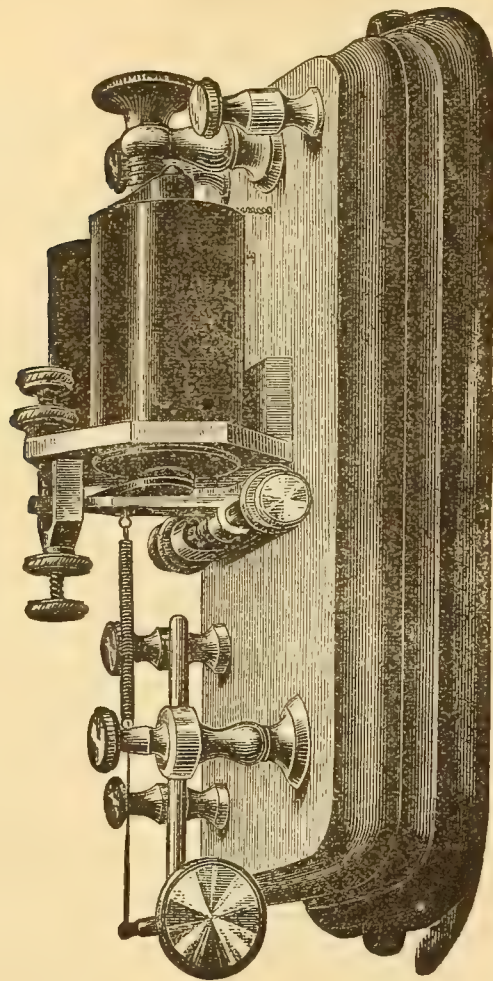
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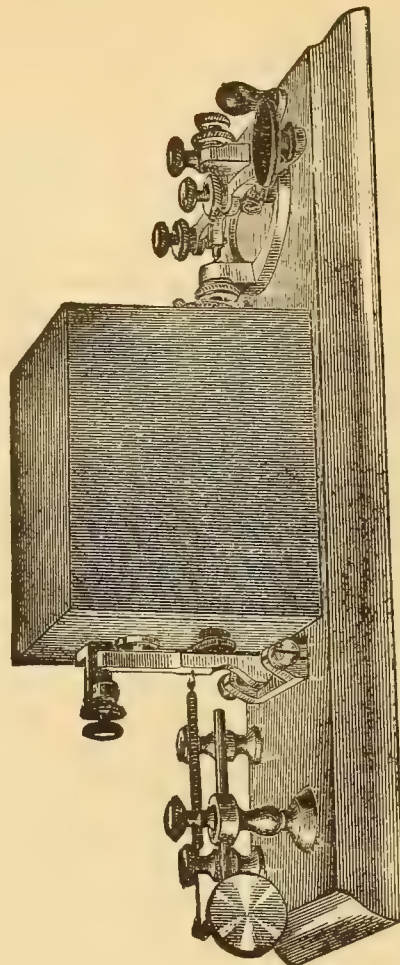
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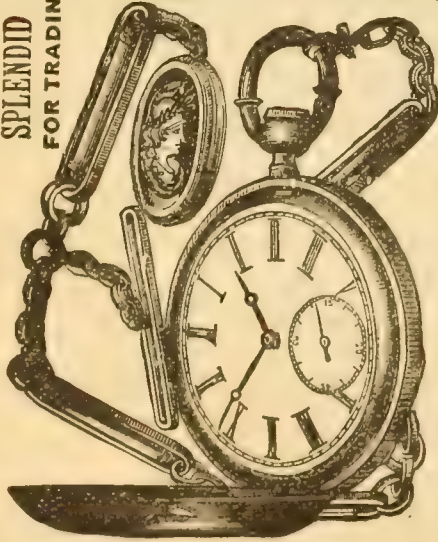
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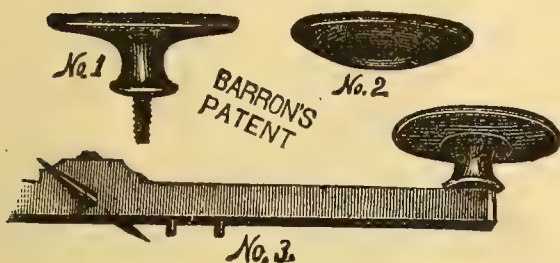


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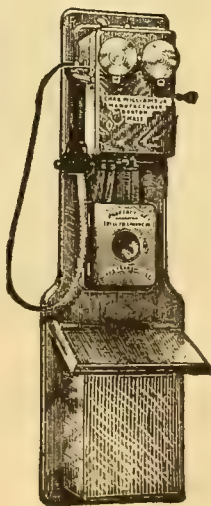
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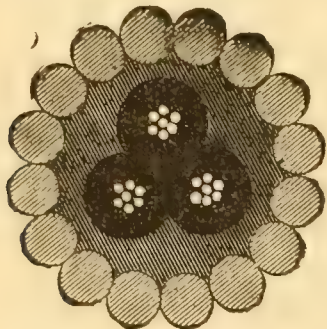
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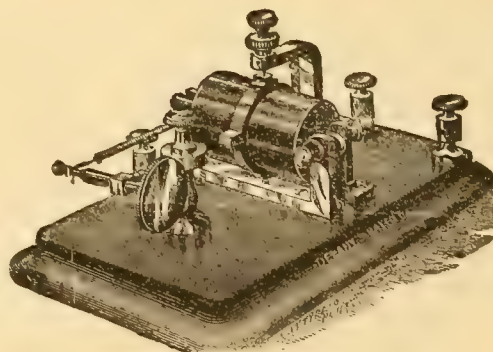
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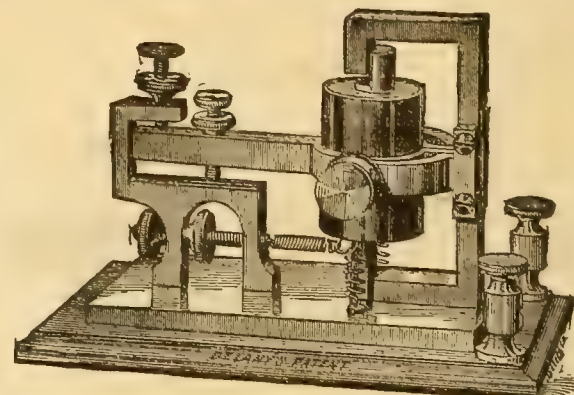
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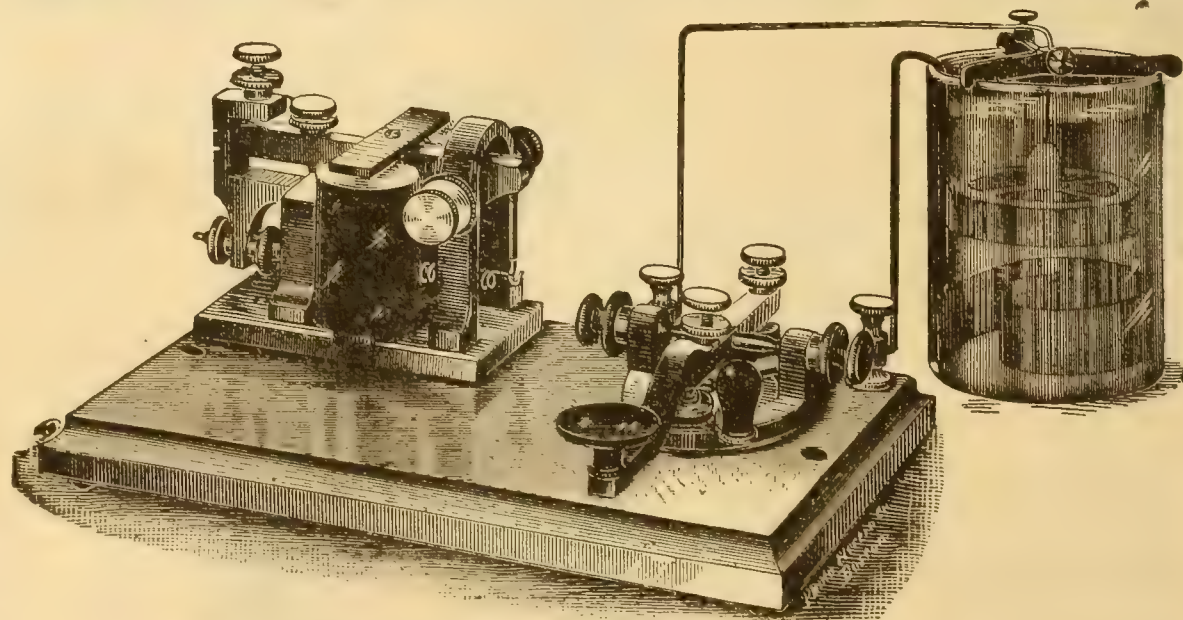
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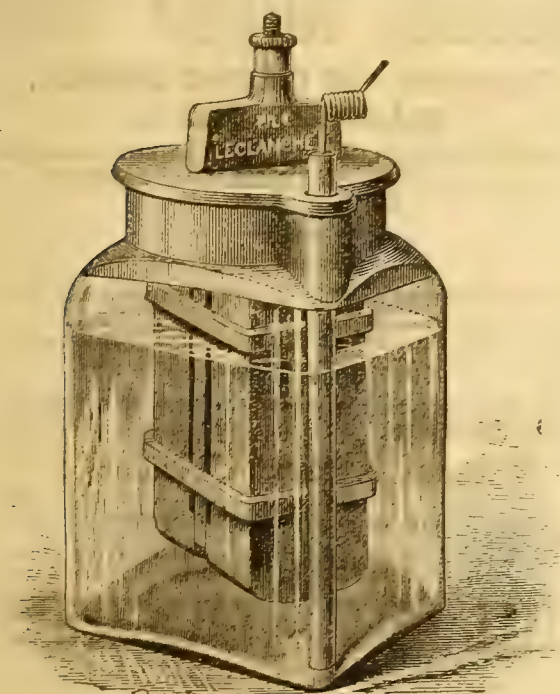
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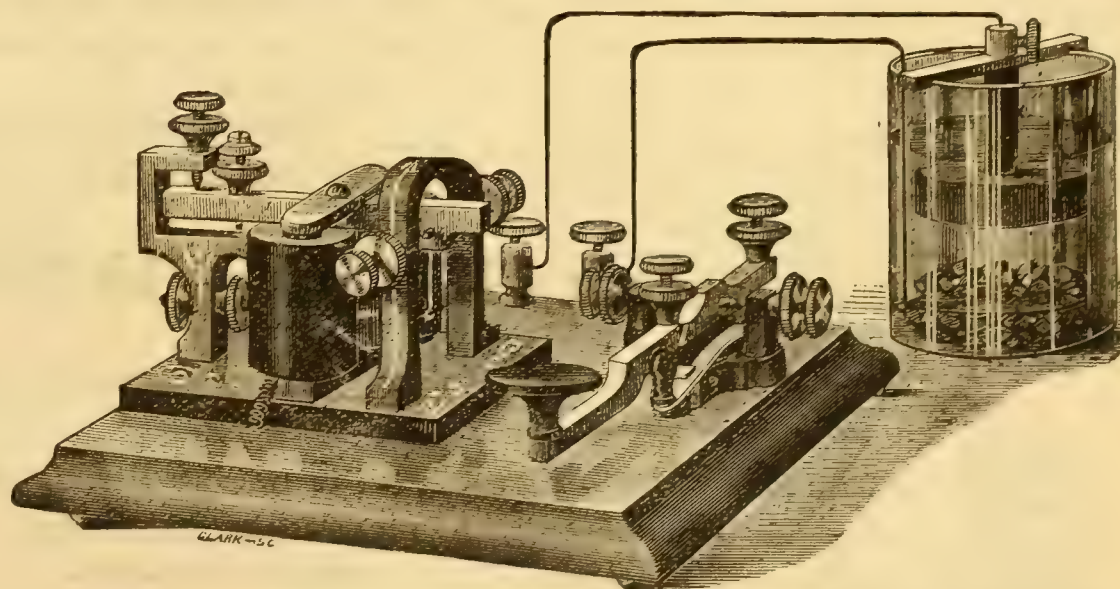
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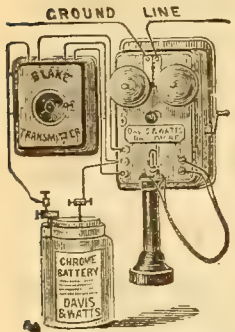
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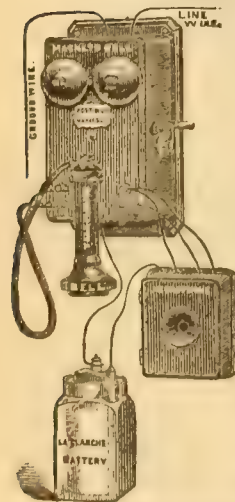
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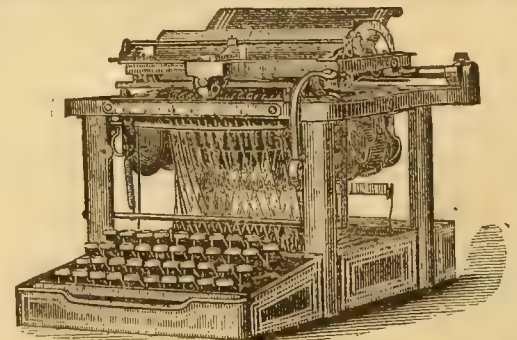
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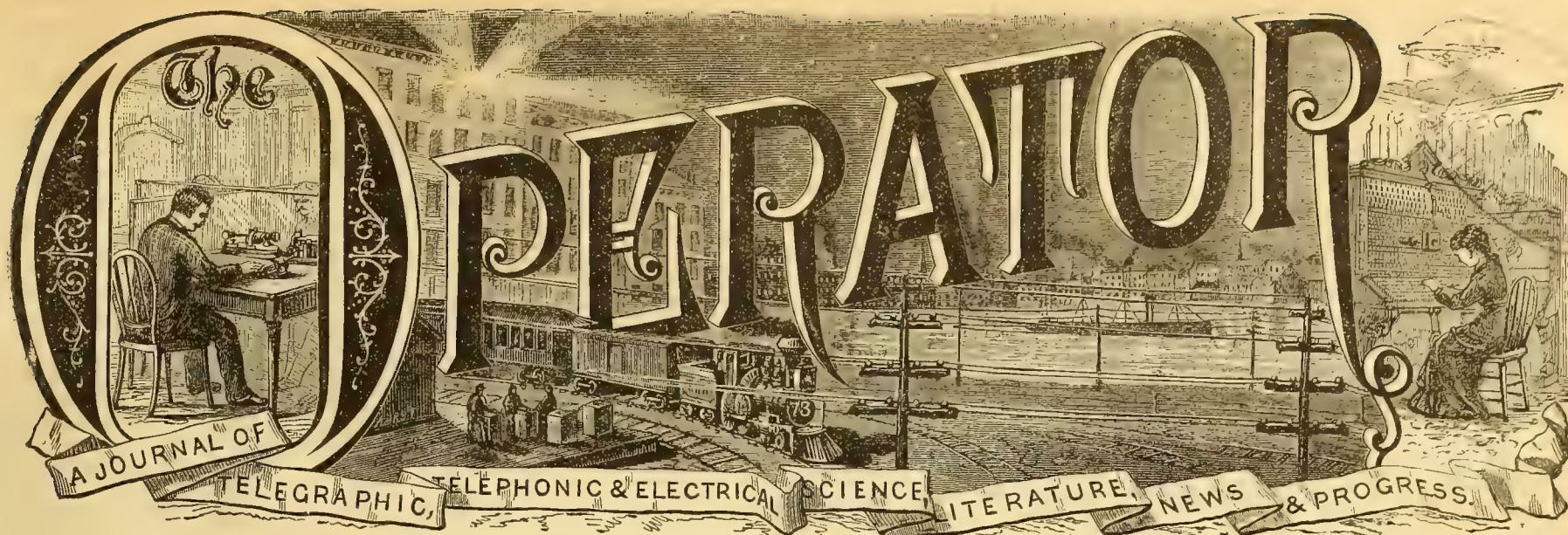
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NEW YORK, APRIL 15, 1881.

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### TANTALUS.

When lovely Mary speaks to me,  
And sets my foolish heart a-thrilling,  
Life has no gift I would so prize  
As just to look in those clear eyes ;  
And she—I think she would be willing.

Her kindly speech, her pleasant ways,  
Fill all my days with sunny weather ;  
To hold her hand in mine, to share  
The faint, shy fragrance of her hair—  
Earth would be Eden altogether !

Alas ! we work by telegraph,  
I and this dainty, far-off Venus,  
And when we hold a tête-à-tête  
We have—Oh, irony of Fate !—  
Two hundred miles of wire between us !

### The Telephone Convention.

The semi-annual convention of the National Telephone Exchange Association, formed last September, at Niagara Falls, for the purpose of collecting, preserving and protecting all matters of importance to telephone interests, was called to order at 10:45 A. M., on Tuesday, April 5, at the Grand Pacific Hotel, Chicago, Geo. L. Phillips, President, in the chair.

The members of the association are those who hold licenses or authority from the American Bell Telephone Company. The officers are George L. Phillips, of Boston, President; H. H. Eldred, of New York, Vice-President; D. I. Carson, New York, Treasurer; Morris F. Tyler, New Haven, Secretary. The executive committee consists of George L. Phillips, Boston; F. G. Beach, Dubuque; W. H. Eckert, Cincinnati; George L. Wiley, New York; C. N. Fay, Chicago. Advisory committee is C. S. Beardsley, Newburgh, N. Y.; George C. Maynard, Washington, D. C.; Noah Hodge, Jr., Akron, O. The following is a list of the telephone

### COMPANIES OR EXCHANGES REPRESENTED,

with the names of the delegates:

Akron, O., Geo. G. Baker.  
Allaire & Reyburn, Peoria, Ill., W. S. Reyburn.  
A. D. T. Co., Louisville, Ky., J. B. Speed and H. N. Gifford.  
A. D. T. Co., Erie, Pa., H. L. Wood.  
A. D. T. Co., Syracuse, N. Y., Jervis Myers.  
Auburn & Newburgh, N. Y., Tel. Ex., H. L. Storke.  
Bell Tel. Co. of Phila., Pa., W. D. Sargent.  
Bell Tel. Co. of Ill., C. N. Fay and L. B. Firman.  
Bell Tel. Ex., Elmira, N. Y., W. N. Eastabrook.  
Bell Tel. Co. of Buffalo, N. Y., E. J. Hall, Jr.  
Bell Tel. Co. of Mo., St. Louis, G. F. Durant and L. M. Fishback.  
Bloomington (Ill.) Tel. Co., W. K. Morley.  
Bradford, Pa., Tel. Ex., Frank A. Newell.  
Central Mass. Tel. Co., Marlborough, Mass., M. Clark.  
Central D. & P. Tel. Co., Pittsburgh, Pa., Henry Metzger.

City & Suburban Tel. Association, Cincinnati, W. H. Eckert.  
Clinton & Lyons Bell Tel. Co., Clinton, Ia., J. K. Balch and B. C. Root.  
Columbus (Ohio) Tel. Co., C. W. Ross.  
Connecticut Tel. Co., New Haven, Conn., H. P. Frost, C. L. Mitchell and M. F. Tyler.  
Danbury (Ct.) Tel. Co., G. L. Phillips and H. N. L. Bernard.  
Denver (Colo.) Tel. Ex., F. O. Vaille.  
Doan & King, Jacksonville, E. J. King.  
Dunkirk (N. Y.) Tel. Co., W. D. Wann and H. Monroe.  
J. D. & J. G. Elwood, Joliet, Ill., J. G. Elwood.  
Evansville (Ind.) Tel. Co., E. S. Babcock, Jr., and E. T. Baker.  
C. H. Haskins, Milwaukee, Wis., C. H. and H. C. Haskins.  
Hawkeye Tel. Co., Cedar Rapids, Ia., Geo. B. Engle, Jr.  
Jamestown (N. Y.) Tel. Ex., Marvin Smith.  
Leavenworth (Kan.) Tel. Co., D. M. Swan.  
Marshalltown (Ia.) Tel. Co., C. W. Ward.  
Metropolitan T. & T. Co., N. Y. City, G. L. Wiley, C. E. Chinnock and M. W. Doran.  
Nat'l Capital Tel. Co., Washington, D. C., B. E. Sunny.  
Omaha Electric Co., Omaha and Council Bluffs, L. H. Korty.  
Pacific Bell Tel. Co., San Francisco, Cal., J. I. Sabin.  
J. S. Ross, Nashville, Tenn., J. S. Ross.  
St. Joseph (Mo.) Tel. Co., J. A. Corby.  
Springfield (Mass.) Tel. Co., G. T. Perkins.  
Springfield Tel. Co., Akron, O., W. J. Baker.  
Southern Mass. Tel. Co., New Bedford, Mass., C. W. Clifford.  
Southern Ohio Tel. Ex. Co., Portsmouth, O., S. Ivers and E. V. Cherry.  
Southwestern Bell Tel. Co., Little Rock, Ark., L. H. Roots and J. N. Keller.  
Telegraph and Telephone Construction Co., Detroit, Mich., W. A. Jackson.  
Union Tel. Ex. Co., Norwalk, O., D. A. Baker, Jr.  
Waterbury, Conn., Automatic Sig. Tel. Co., A. M. Young.  
Western Mass. Tel. Corporation, Pittsfield, Mass., Geo. H. Cary.  
Western Telephone Co., Chicago, Ill., F. G. Beach.  
Youngstown Telephone Co., Akron and Youngstown, O., N. Hodge.

Honorary members: F. S. Potter, Secretary Telephonic Signal Corporation, Pittsfield, Mass.; W. A. Childs, Manager Law Telegraph Company, New York; Hugh Neilson, Superintendent Toronto Telephone Exchange; E. T. Gilliland, Gilliland Electric Manufacturing Company, Indianapolis, Ind.; E. F. Phillips, Providence, R. I.; C. B. Hotchkiss, representing A. G. Day, New York.

Messrs. Theodore N. Vail, General Manager, and Robert S. Boyd and Frank B. Knight, Special Agents American Bell Telephone Co., were at the Grand Pacific, but took no active part in the convention business.

The following were also present:

E. M. Barton, Secretary Western Electric Manufacturing Co., Chicago; Geo. H. Bliss, President Telephonic Signal Corporation, Pittsfield, Mass.; J. H. Bunnell, New York; J. H. Longstreet, New York; E. Ward Wilkins, representing Partrick and Carter of Philadelphia; W. E. Balch, representing the Union Porcelain Works, Greenpoint, N. Y.; Charles A. Rolfe, Superinten-

dent Sales, Utica Fire Alarm Telegraph Co., Utica, N. Y.; W. J. Johnston and J. R. Calder, of THE OPERATOR; Paul W. Bossart, Kansas City, Mo.; W. H. Kelsey, Milwaukee, Wis.; W. W. Smith, Indianapolis, Ind.

No opening address was made by the President, as this was an adjourned meeting from one held at Niagara Falls, September 7th-10th, 1880. The most important business transacted was the receiving of reports of the standing committees. Some of these reports and the discussions they evoked were of a most interesting character. The convention held five sessions in all—a morning and an afternoon session on Tuesday, and a morning, an afternoon and an evening session on Wednesday. At 10:45 P. M. on Wednesday, the convention adjourned, to meet at Saratoga Springs, N. Y., on the Tuesday following the first Monday in September (6th) next.

### COMMITTEE REPORTS.

The standing committees are thirteen in number, as follows:

**LAWS.**—M. F. Tyler, New Haven, Conn.; N. Hodge, Akron, O.; N. H. Watson, Buffalo, N. Y.

**CENTRAL OFFICE (SYSTEM AND APPARATUS).**—C. N. Fay, Chicago, Ill.; W. H. Eckert, Cincinnati, O.; John M. Wheeler, Toledo, O.

**LINE CONSTRUCTION AND MAINTENANCE.**—Robt. Brown, New York City; C. W. Ross, Columbus, O.; R. M. Bailey, Tyrone, Pa.

**CABLES.**—W. H. Pope, New York City; W. H. Boffinger, New Orleans, La.; Chas. H. Haskins, Milwaukee, Wis.

**CALL-BELLS AND CONNECTING LINES.**—H. B. Lytle, Providence, R. I.; Geo. G. Baker, Akron, O.; Jas. S. Ross, Nashville, Tenn.

**TELEPHONE SUPPLIES.**—W. A. Jackson, Detroit, Mich.; H. N. Gifford, Louisville, Mo.; J. P. McKinstry, Cleveland, O.

**ELECTRICAL DISTURBANCES.**—W. D. Sargent, Philadelphia, Pa.; Chas. H. Haskins, Milwaukee, Wis.; C. E. Chinnock, New York City.

**AUXILIARY SYSTEMS.**—Geo. C. Maynard, Washington, D. C.; Henry Metzger, Pittsburgh, Pa.; W. H. Hamilton, Albany, N. Y.

**TELEPHONE JOURNAL.**—H. L. Storke, New York City; Samuel Ivers, New Bedford, Mass.; J. J. McMicken, Hamilton, O.

**EXCHANGE STATISTICS.**—F. G. Beach, Chicago, Ill.; C. N. Fay, Chicago, Ill.; E. J. Hall, Jr., Buffalo, N. Y.

**SUBTERRANEAN LINES.**—C. H. Haskins, Milwaukee, Wis.; H. W. Pope, New York City; W. H. Boffinger, New Orleans, La.

**TELEPHONE EXCHANGE RATES.**—E. J. Hall, Jr., Buffalo, N. Y.; M. Greenwood, San Francisco, Cal.; Geo. F. Durant, St. Louis, Mo.; Geo. H. Twiss, Columbus, O.; M. J. Meyers, Syracuse, N. Y.

**WAYS AND MEANS (INCLUDING PRINTING).**—H. H. Eldred, New York City; Samuel Ivers, New Bedford, Mass.; W. S. Reyburn, Peoria, Ill.

Mr. C. W. Ross (Line Construction and Maintenance) reported verbally in favor of the use



of galvanized steel instead of galvanized iron wire, the advantages to be gained being strength, lightness, and low first cost. He advocated the use of No. 14 steel instead of No. 12 iron. A discussion followed upon the comparative virtues of steel and iron wire, and it was generally agreed that the former oxidized more rapidly than the latter. The question as to the superiority of No. 12 or No. 14 wire was discussed at length, opinions being given and experiences related by Messrs. C. H. Haskins, of Milwaukee; G. L. Wiley and H. L. Storke, of New York; W. D. Sargent, of Philadelphia, and others. In answer to an inquiry by a delegate, the Chair called upon Mr. Wiley to say whether the larger or smaller gauges of iron wire were the first to break in the January sleet storm in New York. Mr. Wiley stated that no difference had been noticed; but this was to be accounted for by the fact that all the wire of the larger sizes, Nos. 9 and 11, in use at that time by the Metropolitan T. & T. Co. was older—had been up for a much longer time—than the No. 12 wire; and, therefore, no satisfactory comparison could be made. The Metropolitan Company used no No. 14 wire.

Mr. Sargent stated that they had used No. 14 galvanized iron wire in Philadelphia ever since the telephone was introduced, and attributed much of the success of his company to this fact, the small wire costing less, creating less inductive trouble and being easily and readily handled, especially on the housetops, where their wires are principally situated. He had commenced using No. 14 wire in 1873 in connection with the American District Telegraph Company of Philadelphia, and believed the life of a wire of this gauge to be not less than six years under the average conditions in large cities. In Philadelphia they have spans of 450 feet on fixtures at present sustaining 60 wires, and during the sleet storms in January comparatively few wires were broken, and in this particular span but six. Latterly they have been using steel wire with very good results, but he was not prepared to say that steel wire was any better than iron, except in the matter of economy. The light wire puts less strain on the fixtures, and admits of lighter timber being used, an important feature on housetop work. During the past winter but one fixture was broken by sleet and ice, and in that case the guys broke first. Wires put up in 1877 are apparently as good today as they were then, giving no trouble from breakage or bad joints.

On motion, the Secretary was directed to dispose of the 500 copies printed of the report of the proceedings at the Niagara Falls convention, at the rate of 50 cents per copy to members of the association and \$1 to non-members.

Mr. Speed, of Louisville, asked for information on the subject of insulators. Mr. W. E. Balch advocated porcelain insulators as better and ultimately cheaper than any other kind. It was objected that on account of climatic influences porcelain insulators could be used in Europe but not in this country. This view of the subject was taken by many of the delegates. Messrs. W. A. Childs, C. H. Haskins and C. W. Ross expressed their views on the subject. After the report of the Committee on Line Construction had been fully discussed and adopted, the meeting took a recess.

The afternoon session was held in the appellate court-room, and the convention was called to order at 3 o'clock. Three applications for membership were entertained and favorably acted upon. The same action was taken with regard to one application for honorary membership.

This preliminary business over, a delegate asked for information upon the advisability of using lightning-arresters in the towers. The gentleman making the inquiry said that he had given up their use for fear of fire. There was a diversity of opinion on the subject. Mr. E. J. Hall, Jr., of Buffalo, called attention to a case in which an operator in the Rochester Exchange, operated by his company, received an extremely severe shock while using the telephone during a thunder-storm. Had the lightning arresters been in use, this would not have occurred, and the protection to property would have been much greater. Mr. Ross had had no accidents, and but very few spools or transmitters burned out

by lightning. Mr. Sargent had lost transmitters but no spools. Mr. G. F. Durant, of St. Louis, and others also gave opinions. The matter was then dropped to give place to the subject of cables. Mr. C. H. Haskins, of Milwaukee, made a brief verbal report on the Brooks cable, a system used by himself with success for short distances in Milwaukee.

Mr. Sargent, of Philadelphia, said that the Philadelphia Bell Telephone Company had used a cable of eighty-two wires covered with cotton, twisted in pairs, and insulated with a composition of rosin and coal oil. The twin wires were grounded, the whole bunch was inclosed in a lead pipe, and the insulating composition was forced through the pipe hot and allowed to cool. The Philadelphia cable was about 500 feet long and perfectly flexible. It has been in constant service since last May, and has given no trouble whatever. It was manufactured by David Brooks, Jr., of Philadelphia. A 50-wire cable—that is, 50 working conductors—of this description can be furnished for from 65 to 75 cents per foot. He desired to call attention to the mode of stringing or suspending the cable over the house-tops. The No. 12 wires were stretched from one fixture to another as tightly as possible, two of the spans being from 80 to 90 feet in length, across streets. A rope was then thrown across and the end of the cable attached to it, a loop of No. 14 wire holding the cable tightly and sliding on the suspension wire was then attached at every foot as the cable was drawn over. This plan keeps the cable close to the suspension wire, and makes a neat job. There is no evidence of cutting or chafing by the suspending loops. Of course there is no strain on the cable itself. This is believed to be the first heavy lead-covered aerial cable ever erected.

Mr. Wiley stated that in New York the Metropolitan company had in operation a similar cable. It was 1,655 feet long, contained 40 wires, weighed a pound per foot, and cost 60 cents a foot. It was made by David Brooks, Jr. It was, thus far, a satisfactory anti-induction cable.

Mr. Chinnoek, of New York, said that there was in operation in New York a number of miles of a cable of his make that was of a not very different construction. Each conductor was covered with lead or tin-foil. Such cables were in use over the East River bridge and one in the North River was 5,200 feet long. By the use of these cables "induction"—so-called—was reduced to a minimum.

Mr. C. H. Haskins referred to the "Foucault" anti-induction cable used some years ago by the Gold and Stock Telegraph Company of New York, and inquired whether it was still in use. Mr. Wiley answered that its use had been abandoned three years ago and the cable taken down.

Mr. Chinnoek called attention to the fact that the first "anti-induction" cable used in connection with telephony was a Chinnoek cable 3,600 ft. long, put up by the Bell Telephone Company of New York, on the East River bridge between Brooklyn and New York. It worked perfectly and is working to-day.

Mr. E. M. Barton discussed the question of the practicability of working underground telephone cables. During the recent summer the speaker was in Marseilles, France, where there were considerable lengths of underground telegraphic cables. By the courtesy of the company he was allowed to undertake certain experiments. They were so far successful that he was convinced that, up to the distance of five miles, it was practicable to use underground cables for telephonic uses. No appreciable retardation or static induction was shown in his test of three miles.

Mr. Patterson read the list of a very large number of subterranean and submarine cables of the Brooks pattern that had been laid for telegraph and telephone companies. These cables were of all lengths, from one of over six miles to those of a few feet. After the description of numerous other kinds of cables, a written report on subterranean cables by H. W. Pope was read by Mr. Charles H. Haskins. The writer favored the underground plans of Mr. Sewall, of Albany, and of Superintendent of Construction Wm. Mackintosh, of New York, but added that since writing the body of the report he had been shown a system invented by Mr. P. B. Delany, which, in his opinion, was likely to revolutionize the whole matter of subterranean cable laying, by

reason of its simplicity and cheapness. As the patents had not yet been secured, he was not permitted to describe the system.

Messrs. Geo. G. Baker, of the Committee on Call-bells and Connecting Lines; W. A. Jackson, of the Committee on Telephone Supplies; W. D. Sargent, of the Committee on Electrical Disturbances; Henry Metzger, of the Committee on Auxiliary Systems; H. L. Storke, of the Committee on a Telephone Journal, and E. J. Hall, Jr., of the Committee on Exchange Statistics, were called upon for reports. They all stated that they needed further time. The convention then adjourned to meet at 9 A. M. on Wednesday.

On Wednesday morning the Association resumed its sessions, President G. L. Phillips in the chair. On motion of Mr. Speed, of Louisville, an assessment of \$5 on each member was ordered to defray the incidental expenses of the convention. It was also decided that the next meeting of the Association should be held in New York in September. The vote on the place of meeting was, however, afterward reconsidered, and Saratoga substituted for New York.

The first paper of the day was that on "Auxiliary Systems," presented by Mr. C. C. Haskins, of Chicago. Mr. Haskins gave a description of the various messenger, fire and police alarm systems in use. He said that the system of special calls could be further extended, and that it had been a great success, as every citizen of Chicago using the system would probably admit.

Mr. M. F. Tyler, of New Haven, Conn., said that they had a system of regulating time all over the State, which was found to be of great value to factories and the like. In Buffalo, Mr. Hall stated that theatre diagrams were kept in the central telephone office and orders for seats filled, the tickets being delivered by messenger.

Referring to the subject of the telephone as applied to fire alarm purposes, Mr. Durant, of St. Louis, said he thought the establishment of the Gamewell or a similar system of fire and police telegraphs should be encouraged by telephone companies, in preference to having the alarms sent in by telephone. Mr. Durant went on to say that in this regard telephone companies were undertaking a good deal of extra work without pay.

Delegates from Cincinnati, Milwaukee, Buffalo and other cities rejected this view of the matter, and held that the companies received an equivalent in the way of use of poles, right of way, and other things which made the question of pecuniary compensation a secondary one.

Mr. Eckert said that about 70 per cent. of the day alarms in Cincinnati came in over the telephone wires. Police alarms were also transmitted in the same manner. The telephone company had secured the co-operation of the Police and Fire Departments, and had found the system to be mutually advantageous. Telephone companies required rights of way, and could not afford to antagonize either the Fire Department, the insurance agents or the citizens.

Mr. Sabin said that in San Francisco they had established a bureau of general information for the use of subscribers. Points as to happenings in the city, election news, orders for goods, inquiries as to whether a person was staying at a certain hotel, all came in over the wires. A record was kept of the orders of customers, and a charge of five cents made for each call.

Mr. Geo. B. Engle, of Cedar Rapids, was appointed a committee to prepare a paper on fire alarms for the next convention.

Dr. Baker presented the report of the Committee on Call-Bells and Connecting Lines. He said the battery system had been abandoned by almost all exchanges, in favor of automatic magnet bells.

Mr. Jackson read a report on "Office Supplies," showing the merits and shortcomings of various kinds of batteries and other apparatus.

Mr. Fay said that figures in regard to office work had not been obtained, partly because of the engagements of members of the Committee and partly because no uniform system of statistics had been prepared. He suggested that exchanges be requested to furnish information for the next meeting of the Association, as follows: Number of wires in each office; number of operators employed; pay-roll of employees of each office; time employed in making connections; delay in disconnecting.

Mr. H. C. Haskins said an attempt had been



made by the American Bell Telephone Company to procure just such statistics, and wanted to know what had become of the figures thus obtained.

The Chair said he believed the American Bell Company was perfectly willing to furnish the Association with the figures as soon as they were prepared. But the trouble was that the reports were incomplete and by no means uniform. The American Bell Company was also engaged in experimenting with cables, and the result of their experiments would doubtless be of great value to the exchanges.

At this point the Association took a recess until 2:30 P. M.

Laws and rates were discussed in executive session in the afternoon, and very valuable figures and statistics given by the committees on these subjects. Mr. Hall, of Buffalo; Mr. Eckert, of Cincinnati; Mr. Sabin, of San Francisco; Mr. Durant, of St. Louis; Mr. Tyler, of New Haven; Capt. Hodge, of Akron, all gave valuable statistics or opinions. "Hall's Toll and Ticket System," as used in Buffalo, received much commendation.

Mr. Eckert, of Cincinnati, presented a report on central office statistics, and Mr. Fay, of Chicago, and Mr. Sargent, of Philadelphia, gave figures in the same line. It appeared that in Chicago and Cincinnati the average number of conversations per day to each subscriber was six. A recess was taken from 6 to 8 P. M., and at the latter hour the convention was again called to order, Mr. Wylie Smith, of Indianapolis, in the chair.

Mr. Sargent, of Philadelphia, presented the report of the Committee on Electrical Disturbances. One of the greatest troubles in telephoning was leakage, and there was need of much improvement in the matter of insulation. Devices had been tried for the prevention of leakage, but none had met with any great degree of success.

Mr. Haskins, of Milwaukee, said that in Europe they used an iron pin on the cross-arm, and were able to secure better grounding. There was great trouble from iron-rust on ground-wires in this climate. Grounding by means of a gas-pipe was an imperfect business, for the continuity of metal was broken by the red lead and other substances used at the joints. There was trouble also arising from the reflex action of one wire upon another; and whatever care might be taken this could not be entirely overcome. The speaker believed the grounding of wires used for electric lights upon the same water-pipe used for grounding telephone lines would result in trouble to the latter.

Mr. Chinnock, of New York, described the operation of lines running from New York to Coney Island, comparing them with lines to Williamsburgh. Water-pipes connect the latter place by means of the East River and the bridge, but Brooklyn water-pipes do not extend to Coney Island, and to this fact he attributed the great difficulty of securing lines clear of induction to Coney Island, while to Williamsburgh, where there were water-pipes, the induction was much less. He held that the earth is not a reservoir of electricity, and is a good or very bad conductor according to the artificial conductors which the current was able to find in its passage.

A general discussion followed in regard to the best means of securing reliable grounds. Mr. Haskins said that this was of the first importance, and that accidents caused by lightning were almost always found to occur where this was neglected. In cities the ground wires should be soldered to the gas or water-pipes, and in the country they should be led to wells. It was not sufficient to simply conduct them to the earth, but the limit of permanent moisture must be reached.

Mr. Frank Newell, of Bradford, Pa., gave an interesting account of experiments made by him in the substitution of tin-foil for solder. He simply covers joints in his iron or copper wire with one thickness of tin-foil, and has found that after months of exposure to heat, cold and moisture, the joint remains perfectly protected and the wire bright under the tin-foil. The cost of this mode of soldering would be trifling.

Mr. Haskins explained, with the aid of a diagram, the exchange system devised by his son, Mr. H. C. Haskins, and after answering many inquiries invited all present to go to Milwaukee the next day and see the system in practical operation. The invitation was accepted by a

number of delegates. The system referred to will be fully described in the next issue of THE OPERATOR. After considerable informal interchange of opinions the convention adjourned and some of the delegates returned home on the early morning trains on Thursday, but many remained examining the manufacturers' exhibits, the Chicago telephone exchange systems; the factory of the Western Electric Mfg. Co., and the fire and police telegraph systems.

The information obtained at the convention and the general interchange of views are considered to be of great value to those interested in the telephone business. The manufacturers' displays were not the least important feature of the occasion. We hope next issue to be able to give a full report of the exhibits, with illustrations of the novelties shown.

#### The Consolidation—Suits and Counter-Suits—Screwing up the Vise.

Although Judge Barrett denied the motion for a permanent injunction, and dissolved the temporary injunction against the consolidating companies, the ways of the new Western Union have not yet become paths of pleasantness and peace. Litigation in one shape or another continues to fret the minds of the men who have united the great telegraphic systems of the country.

Our last issue, on the 1st inst., left three series of motions to be heard in the Superior Court Chambers, in the suit of William S. Williams against the Western Union. The principal feature in these motions is that the American Union and Atlantic & Pacific Companies seek to be made parties to the suit, as co-defendants with the Western Union, in order, as they say, to protect their rights under the agreement of consolidation; claiming that, as they have already delivered their property to the Western Union, they will have no remedy if the latter company be enjoined from carrying out the agreement of consolidation.

These cases were argued on the 4th inst., when they were submitted to Judge Spier, and the formal trial of the suit was set down for Monday next, April 18.

Judge Sedgwick's injunction restraining the issuance of a stock dividend of \$15,526,590 to the stockholders continues in force.

The "Anti-Monopoly League" is still hard at work building up branches in the various States and threatening to arouse the people to the adoption of extreme measures against the abuses of uncontrolled corporate power.

In the Pennsylvania Senate, on the 5th inst., Senator Hall's "Anti-Consolidation Telegraph" bill occupied almost the entire time of the session. This is the bill to escheat to the Commonwealth the telegraph lines and property of telegraph corporations, associations and companies which violate the provisions of the constitution prohibiting the consolidation with or the holding of a controlling interest in the stock or bonds of a competing line of telegraph, or the acquisition by purchase or otherwise of any other competing line of telegraph. The bill was finally passed by vote of 27 yeas to 10 nays. It was also favorably reported in the House on the 12th.

The first indications of the coming pressure from competing companies have also begun to make themselves felt. The First Comptroller of the Treasury Department has recently rendered a decision upon a proposition received from the American Rapid Company to transmit messages at greatly reduced rates between the points with which they have connections. Notwithstanding that the rates for government telegrams were fixed by the Postmaster-General (June 30, 1880), the Comptroller says that the rates to be paid to telegraph companies now rendering service to the United States must conform to the lower rates offered by the American Rapid.

Meanwhile the promoters of consolidation have not been idle, but have kept on consolidating just as though law-suits and judges were unknown. Since our last issue the Atlantic & Pacific Telegraph Company has been literally swept out of existence, and many hundreds of operators and clerks have been thrown out of employment. The changes in some places, particularly in the clerical departments, have amounted to a complete revolution. The officers

of the new consolidated company claim that the wholesale removals and appointments are solely for the purpose of infusing "American Union" vitality into the old Western Union methods, and that they are governed by the exigencies of the new order of things. Their aim is, they say, to improve telegraphy inside of the office, as well as for the benefit of the outside public. There is a disposition shown in all large offices, in every city, to abolish the great distinction between "clerks" and "operators;" that is, to employ only clerks who are capable of working a wire. By this plan it is believed that in case of sudden emergency the various offices will never be at a loss, and that whenever there occurs any sudden pressure upon the operating room, the wires can always be manned by a draft upon the desks of the clerks.

In this city a very large number of operators and clerks have been thrown out of employment. Although there is considerable jesting and good-humored "resignation" on this state of affairs manifested by the men, one cannot be blind to an undercurrent of bitter feeling, which is not confined exclusively to the victims.

This revolution also appears to have been used as a pretext for a partial reduction of salaries. A certain class of men who have hitherto received \$75 and \$80 per month have been discharged, and in some cases reinstated—that is, they agree to perform the same daily tramp on the same tread-mill for \$15 or \$20 less per month. This state of affairs is to be deplored. Legally the company is right, but whether or not the reduced salary is sufficient to support an honest employé, to keep him honest, to keep him faithful and strictly moral, and to induce him to render in return anything more than perfunctory work, with the prospect of chronic pauperism staring him in the face, is a question which most concerns those who, holding the destinies of American telegraphy in their hands, profess themselves desirous of creating a model service; and to be striving, as did the late Mr. William Orton, to make "the telegraph in America the synonym of honor, enterprise and success."

#### Confessions of an All-Night Man.

The possession of illustrious talent is not a necessary qualification of the all-night man. He has little hope that his name will be written in telegraphic history as that of one who never "broke," nor is it probable that a presentment of his features will ever be enshrined in "Our National Portrait Gallery" as those of an operator who once vanquished the "automatic." His virtues are quiet and unobtrusive—any other kind would be superfluous, for there are none to note them.

At two o'clock the last press operator departs, the clatter of the sounders ceases one by one, and gives place to the seeming audible silence that follows the cessation of a penetrating noise such as that of the operating room, and the all-night man seems to be alone. I say seems to be, but *he* knows better. See that long, jagged, horizontal crack in the wall, apparently lined with a fringe of hairs, monotonously swaying to and fro, "ohne hast, ohne rast"—without haste and without rest. A physiologist would describe the crack as "ciliated," but the all-night man knows too well that those waving filaments are neither hairs nor cilia; they are the antennæ of a million cockroaches, and back of each pair of antennæ there is a corresponding pair of cold, glittering, remorseless eyes that are never lifted from his form, but follow his every movement throughout the night. As he passes from one end of the room to another, he feels those million pairs of eyes turn slowly in their sockets to keep him in view, and he shudders. Sometimes he cannot endure it; he makes a sudden sally toward them, and the swaying antennæ instantly vanish, but in a moment they are all back. Their owners never venture forth in his presence, and he wonders on what they subsist, for the operators have long ago become too



shrewd to share their luncheon with them, and there is nothing else in the office edible. The newspaper office cockroach can hold nightly high revel over the contents of the editorial paste-pot, but *Blatta telegraphica* is without visible means of support, unless, indeed, he can live and thrive on the galvanic current alone, "Like the *acarus* bred in Crosse's flint-solution."

To *Blatta telegraphica* is due the anomalous fact that no all-night man has ever been known to sleep while on duty; it would be impossible with the consciousness of all those pitiless eyes upon him. Were such a thing to happen, the battery might drop off one of the railroad wires, and there being no one awake to replace it, great detention might be caused to trains, involving delay to the U. S. mails and other consequential damages. Hence it will be seen that, like many another humble organism, *B. telegraphica* serves a wise purpose in the economy of nature.

Sometimes, though, the all-night man stretches himself upon one of the tables to rest. Then a lot of mice emerge from somewhere, and a diminutive circus performance takes place. All at once the silence is broken by a telegraphic voice at his elbow, which asks, "Did you see the girls to-day?" and another replies, "Yes, they told me to tell you to —" It is two railroad operators, who have come to a commercial wire to have what they call a "buzz." Their conversations always begin thus abruptly, probably because they have arranged the preliminaries on their own wire. The all-night man has no sympathy with such callowness; he "turns them down" immediately, and resumes his attitude of repose.

Presently it breaks out afresh in a far corner of the room. Now it is an extract from a country newspaper transmitted helter-skelter, with fine scorn of spaces, in a style that might make the angel Morse weep. After a moment it ceases for a brief interval, then is resumed for another moment, and so on. It is a nascent Eitemiller at some rural railway station, timing himself to ascertain how many words he can transmit in one minute, and dreaming of the proud hour when he shall wield the key of a press wire in a great city office.

A pitying smile curls the lip of the all-night man for an instant, as he reflects how much better off that ambitious plug is in his present position, if he but knew it, than he would be in the one he covets. Here, in this office, where the all-night man stands thirteenth on the list of candidates for promotion to *daylight work*, are thirty-five operators, whose intelligence, diligence and good habits, if applied for the same length of time to commercial or industrial pursuits, ought to have put most of them in a fair way of acquiring a competency, whereas they have now little prospect of ever being other than as they are. It is a by-word in the office that "few die, and none resign." On the other hand, on the very railway—a western one—where that aspiring youth is wrecking the Morse code, two of the general officers of the company are old operators, three ex-operators hold subordinate but responsible and remunerative positions, four of the best paying agencies on the road are filled by men who graduated at the key, and there is not an operator on the line who has not some advancement to look forward to, if worthy of it.

This train of thought recalls to the all-night man the memory of a friend of his youth, who began life in what might well seem to be unpromising circumstances—as operator at a little station whose only right to be was the presence

there of the company's repair shops. Having no other place to pass his spare time, he frequented the master-mechanic's office, picked up a knowledge of mechanical drawing and the use of tools, abandoned the key for the workbench, and is now foreman of a flourishing manufacturing establishment, with an assured future before him.

It is not surprising that the all-night man is a pessimist, and takes a gloomy and cynical view of men and things, for his dealings are with the dark side of life. The sweet influence of woman holds little sway over him, for those of the gentler sex with whom he comes into contact during his hours of duty are justly objects of suspicion, as are also many of the males. It is a nightly occurrence for some inebriate, who has been ejected from the drinking saloons at midnight, attracted by the office light, to pound on the door and demand wherewith to quench his raging thirst, under the delusion that he has found an all-night groggery.

There are exceptional cases that appeal to his better part. One morning, between two and three o'clock, there entered the office a person in whom the all-night man recognized at once the proverbial "gentleman and scholar." His language was refined, his attire faultless. He was in distress, the train on which he had just arrived had been delayed some hours, his friends lived far in the suburbs, he could not disturb them at that unseemly hour, his funds were exhausted—would the all-night man kindly lend him five dollars until the next night, to enable him to stop at a hotel? He would leave, as a pledge, his topaz ring, with his initials engraved on the inside, the gift of a dear friend. The all-night man smiled. Here was an unsophisticated person, indeed, who imagined that an all-night man might be the possessor of five dollars! He blushed to confess to the handsome stranger that all that was left of his last month's wages was a paltry two dollars. If that would be of any service—? Need I say more? The all-night man had more hair on his crown and less on his chin than he has now. He hesitated to take the ring—it seemed so mean to take it—but he did want to wear it, just for one night. He can wear it now whenever he wants to, but he never does. Its intrinsic value is about two cents, but it is worth far more than that to the all-night man; in fact, money would not buy it now; for it is all that is left him of the sweet innocence of youth.

There was one occasion which the all-night man will always recall with pride—the time when he had as guests, for a whole week, a telegraph president and a distinguished electrician. Think of that, ye plugs—an all-night man hobnobbing with a telegraph president and a world-renowned scientist! Well, he was not exactly world-renowned at that time; his reputation then was chiefly that of a most skillful operator. His "copy" was marvellous; for two weeks after his departure every operator in the office was trying to imitate it.

It came about in this way. The "Sendemfast" Telegraph Company had just been organized on the basis of a new method of telegraphic transmission, which was greatly to increase the capacity of ordinary wires, besides dispensing with high-priced operators and substituting cheap boys and girls in their stead. That was what the public announcements said, but the all-night man had private assurance that, while the successful establishment of the Sendemfast system was going to carry great devastation into

the ranks of the plugs, it would really create an increased demand for strictly first-class operators, such as himself.

Being anxious to ascertain whether their system could be operated successfully on long wires, and having none of their own to experiment on, the Sendemfast Company obtained permission to use for experimental purposes, after business hours, one of the wires terminating in the all-night man's office. It is needless to say that that person was wide awake to all the proceedings.

The great difficulty, the electrician said, was to get rid of the inductive charge and discharge of chance relays in the circuit. The all-night man assured him that strict orders had been promulgated to have all relays cut out of that circuit. Nevertheless, on the first trial, when instead of Morse characters the receiving tape registered an irregular and continuous line, the electrician, after careful scouting, asserted that there were still four relays somewhere in the circuit. Then he shunted into it a little box of electro-magnets, one for each of the supposed relays, but wound the reverse way, in order to neutralize their inductive action. This had the effect of causing the irregularities on the receiving tape to assume a grotesque resemblance to Morse characters strung on a string, the string being the continuous streak before mentioned, which persisted undimmed.

Four nights of experimenting failed to change this result, and the disturbing streak was set down to the interference of earth currents and induction from parallel lines, for which there was no remedy at hand.

On the fifth night, when the electrician came in, his countenance was radiant. He had changed a part of his attire, and appeared in a navy-blue flannel shirt, with a striking turn-down collar, and a gorgeous anchor worked on the bosom. "I have got it now," he cried enthusiastically, "the best thing out!"

"You have found a remedy for the trouble?" suggested the all-night man.

"Remedy, no; but this shirt—look at it! Only cost a dollar and a half, and I don't have to ever get it washed!"

Years have glided by since then, leaving their gifts of joys and sorrows, and vanishing into eternity, and still the all-night man plods patiently on, fondly dreaming of the first-class daylight position that is to be his when the Sendemfast system shall have superseded and pushed to the wall the dear old Morse that we all know and love.

ALBERT FRESCO.

#### Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

BY T. D. L.

Q. 105. What is the Gramme machine?

A. The Gramme machine may be regarded as forming a class by itself. It consists essentially of a ring of soft iron, covered with a great number of coils of insulated copper wire, the respective ends being all connected with the separate sections of two commutators fixed on the axis of the machines. The ring, with its coils and commutators arranged upon the axis, revolves between the poles of a permanent or electro-magnet.

This machine differs from all others, and has been extremely successful and to a great extent instrumental in establishing electric lighting on its present footing. Both this machine and the



Brush may be worked either from permanent or electro-magnets.

Q. 106. What is meant by the term "dynamo-electric machine," and in what does such a machine differ from a "magneto-electric machine?"

A. The term dynamo-electric has by common consent come to be exclusively applied to machines which I have placed in the third class described; namely, those in which the current is developed in the first place by the residual magnetism (which is never entirely absent from the iron core of an electro-magnet that has once been magnetized), and in which the current so developed is passed through the coils of the developing electro-magnet, thus increasing its magnetism, and, as a consequence of the increased magnetism, increasing also the current developed by it, the machine continually increasing its action, as it were, at compound interest, up to a certain point, where the work of bringing the armature past the poles becomes so difficult as to balance the driving power.

The term dynamo-electric is also occasionally made to include machines of the second class, such as Wilde's, and, strictly speaking, is applicable to any form of machine (including even those which develop frictional electricity) by which work is transformed into electricity. But so universal has become the custom of limiting the term to the machines described above, that it is now useless to attempt any change. The term magneto-electric is generally limited to those machines in which the electricity is induced by the magnetism of permanent magnets.

Q. 107. What is an induction coil, and why is it so called?

A. It is an instrument designed to obtain electricity of great electro-motive force from a battery of small electro-motive force. It consists of a short coil of comparatively thick insulated wire, around which is wound a very long coil of fine wire. In the centre of the coarse wire coil is placed a core of soft iron, or a bundle of soft iron wires. The coarse wire coil is placed in circuit with a battery and circuit breaker.

The induction coil was invented by Prof. Page, of Salem, in 1836; brought to a state of great perfection in the shop of Ruhmkorff, in 1851, and in 1857 much improved by Ritchie, of Boston. It is both a magneto-electric and an electro-magnetic apparatus, because the induced current which manifests itself at the terminals of the fine wire coil is formed by the conjunction of a magneto-electric current, caused by the rapid magnetization and demagnetization of the core as the voltaic current in the coarse wire coil is alternately made and interrupted, and of that excited in the fine wire coil by electro-dynamic induction from the coarse wire coil during the same contacts and interruptions.

To particularize: We have already seen (query 12) that when a closed circuit is in proximity to a conductor which is in connection with a voltaic battery, at the moment a current arises or ceases in that conductor another current of momentary duration arises also in the closed circuit near it. We have also seen that when a magnet is moved near a coil of wire or a coil of wire near a magnet a current is developed in the coil on the approach of the two, and another in an opposite direction as they are parted.

These facts are combined in the induction coil, and the coarse wire coil performs two duties at the same time, namely: 1st. That of advancing and retreating the inducing magnet, which it does most effectually by alternately causing the soft iron core in its interior to become magnetized and demagnetized. 2d. That of causing, by the make and break of its own circuit, momentary currents of electricity of rapidly alternating direction.

Thus we see that the voltaic induced currents are superadded to those induced by the core in its magnetization and demagnetization, to form the induced currents circulating in the fine wire coil.

The instrument is called "the induction coil" because the currents of the fine wire coil are produced solely from inductive causes; and the electro-motive force thus induced in a long coil is so enormously greater than that of its inducing battery as to assume an appearance very similar to that of frictional or mechanical electricity.

Q. 108. What is the "primary circuit" and

what is meant when we speak of a "primary current?"

A. The primary circuit or coil is the coil of comparatively coarse wire which is connected up with a battery and circuit breaker. Within it is inserted the soft iron core, and it is itself inserted within the coil of fine wire. It may also be called the "main," or "inducing circuit;" but the term "primary circuit" literally means "the first circuit."

It is called the primary coil because it is employed for the conveyance of the battery current. It will hereafter be understood that whenever the word "primary" is used with reference to induction coils, it is intended to signify the battery circuit. When we speak of the primary current we mean the battery current that traverses the primary coil. It is sometimes called the inducing current.

Q. 109. What is meant by the terms "secondary coil" and "secondary current?"

A. The secondary coil is the long coil of fine wire which surrounds the primary coil, and in which the momentary currents, induced by the primary coil and core, are developed.

As the induced currents are much more powerful than the primary currents, it is necessary to be much more careful in insulating the wire composing the coil.

The wire of the secondary coil is much longer and finer than that of the primary. It is called the secondary coil, both in contradistinction to the primary coil and because the currents set up in it are dependent entirely for their existence on the first, or primary current, which circulates in the primary coil and excites magnetism in the core.

The secondary or induced current is the current or, more properly, the series of currents which are excited in the secondary coil by the rapid magnetization and demagnetization of the soft iron core in conjunction with and caused by the make and break of the primary circuit. This current has a much higher electro-motive force than the battery or primary current.

Q. 110. In speaking of induction coils, what is meant by the extra current?

A. It is the name given to a current set up in the primary coil by induction between the several convolutions of the same wire when a current is sent through it. It is produced both on making and interrupting the battery contact; but is much stronger when the circuit is broken, because then the extra current is in the same direction as the primary currents, but when the circuit is made the extra current is in opposition to the primary current, which, as it were, arouses an opponent in its own path. Thus we see that the action of the primary coil in addition to inducing a current in the secondary coil also induces a current itself. This current is made apparent in the following manner: If we attach the two coils of a wire to a battery, and place a contact breaker in circuit, a very fine spark will be observed on breaking contact.

But if we wind the piece of wire into a helix or spiral, we will at once notice that the spark is much larger and brighter. This is caused by the action of the extra current which, as previously stated, is on breaking contact in the same direction as the battery current, and the spark is the combined effect of the two currents.

The extra current caused when contact is made is called the "inverse current;" when caused by breaking contact it is called the "direct current." The phenomena caused by the extra current were first noticed by Henry in 1832. It was subjected in 1834 to experiment by Faraday, who proved that both the spark and shock given on breaking contact were due to this cause.

Q. 111. Why is a soft iron core inserted within the primary coil?

A. Because, in the first place, without it the current produced in the secondary coil would be caused solely by dynamic induction from the battery current circulating in the primary coil, and in that case would be comparatively weak; while when the core is inserted, it is alternately magnetized and demagnetized by the rapid make and break of the battery circuit, and so induces a magneto-electric secondary current, which adds its effect to that of the current caused by the voltaic or dynamic induction, and makes the combined effect very strong and intense. In the second place, the soft iron core is often utilized as an electro-magnet, and in that capacity is

made to attract the contact breaker; thus effecting by its own magnetism the rapid interruptions of the battery current.

As it is important for the proper operation of an induction coil that the core shall gain and lose its magnetism very quickly, it is usually composed of a great number of unpolished soft iron wires, which are partly insulated one from another by a thin coating of oxide. The circulation of induced currents is thus prevented.

#### Proposed Railroad Telegraphers' Society.

At a meeting of railroad telegraphers held in Jersey City, N. J., on Sunday, March 13, for the purpose of discussing the feasibility of organizing a Railroad Telegraphers' Benefit Society, it was decided to issue an address asking for the views of railroad telegraphers in general, and inviting suggestions and opinions on the subject.

The desire for a benevolent and insurance association among railroad telegraphers has long been felt, and there is no doubt that, properly organized and wisely conducted, an association of this kind could, in a few months, be so enlarged and extended as to embrace nearly every railroad telegrapher in the country, thereby proving a complete success.

Various opinions were advanced at the meeting referred to, regarding the object of the proposed association. Some were in favor of making it a mutual benefit society, with monthly dues for the creation of a sick fund and an assessment for each death, while others were in favor of the death assessment only, with no sick fund, and there were still others who favored the adoption of both plans.

There were those who believed that the proposed society should be something more than a benevolent one; that its members should combine to advance and protect their interests in every way; that as a class they abhor any society or combination of men that savors of trades unions; that they should combine their efforts to build up a society looking toward a more fraternal feeling among themselves, and to establish and maintain a position of industrial independence by recognizing the law of supply and demand as it applies to the telegraph business.

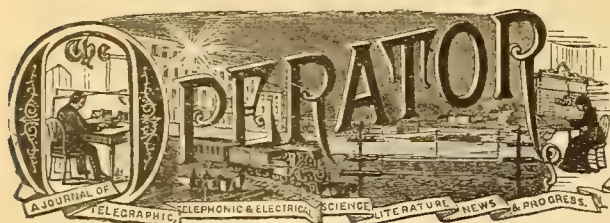
Some were strongly in favor of making the society strictly "railroad" in its character; that is to say, admitting to membership none but those actually employed on railroads, while others thought that it would be well to admit commercial operators and those engaged in other branches of the telegraph service.

It was unanimously decided to issue this call. All railroad telegraphers who are in favor of a society such as the one proposed are earnestly requested to forward an expression of their views, the same to be read at the next meeting, due notice of which will be given through THE OPERATOR.

The meeting resolved itself into a committee, and appointed Mr. Geo. E. Holbrook, Secretary *pro tem.*, to receive all communications. Mr. Holbrook's address is corner Tenth and Provost streets, Jersey City, N. J.

THE inventors of the various electric lights have invented a new theme to wrangle over, viz.: Will the electric light tan a fair skin? The vendors of the voltaic arc light boldly assert that ladies will have to erect parasols whenever the incandescent principle is in use, while the peddlers of the incandescent light say that the voltaic arc principle will develop a face like a boiled lobster upon any miserable being who remains long beneath its effulgence. The question is still unsettled.





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## NOTICE.

A branch office of *THE OPERATOR* has been established at Nos. 84 and 86 La Salle street, Chicago (Room 9), half a block from the Western Union general office. Mr. J. H. Green, the manager, has a full supply of our several publications on hand, and will fill all orders for the paper or books at the same rate at which they can be had from New York. The telegraphers of Chicago, and those visiting that city, are cordially invited to call at the new office. Our general agent, Mr. J. R. Calder, will visit Milwaukee during the present week, and expects to leave Chicago on Monday, April 18, for St. Louis and Kansas City, calling at Bloomington, Alton and other cities on the way, for the purpose both of securing subscriptions and appointing agents.

## THE TELEPHONE.

The national gathering of telephone men, at Chicago, on the 5th inst., emphasizes better than anything else the rapid and prodigious growth of that very recent invention. At their previous meeting, held at Niagara Falls, September 7-10, 1880, there was represented \$10,000,000 of stock; which, after an interval of only seven months, now represents something like \$17,950,000 of stock, all of which is unpurchasable. Indeed, among all the wonders of the age, there is nothing more wonderful than the invention and progress of the telephone, made practicable only five years ago—Prof. Bell claims that the date of the invention of his method of articulate speech was Jan. 15, 1876. It is already found in use in all parts of the world, as popular and useful in Egypt, New Zealand and China, as in America and Europe. This year alone the English post-office authorities have given orders for 20,000 telephones, while its rapid spread in this country is almost beyond calculation. It is introduced with equal eagerness for commercial and domestic uses; it is fast driving out the old fire-alarm telegraphs, while for purely scientific purposes—such as detecting faults in ocean cables without resorting to the old and expensive process of cutting and splicing them—its availability seems beyond calculation.

Much of this is due to the restless energy and genius of its inventor and promoters, for the telephone has drawn to its assistance some of our most profound scientists and brightest business men. It has, in return, brought them in one short lustrum wider fame and ample fortune; the latter statement being best illustrated by an incident which recently occurred in England. At a meeting of the United Telephone Co., last autumn, the discussion developed the remarkable fact that two men who had paid

\$3,500 for their privilege of acting as the company's agents for the sale of telephones had refused \$150,000 offered by the company to cancel that engagement.

As will be seen from the item in the Telephone Department in the present issue, the number of exchanges in operation in this country has increased in one year from 138 to 408, and the number of instruments in use from 60,873 to 132,692, so that in the United States only one city having a population of over 15,000 is now without a telephone exchange. Other items in the same department show how the introduction of the telephone is being extended abroad as well as at home.

But the uses of the telephone must still be widely extended. Rapid strides are already being made in long distance telephoning, speech having been recently transmitted from Tours to Brest, a distance of over 800 miles, with a single Leclanché element, the experiment being witnessed by Prime Minister Jules Ferry and other dignitaries. These experiments must be pushed further, for the application of the telephone to long distances has become a necessity, and its use must not stop with the shore. It must be applied to ocean cables, and made audible during the noise of military operations, and even above the roar of battle. Connecting the most remote corners of the earth, like the telegraph, it must rise superior to that invention, and bring them virtually within *speaking* distance.

We have taught ourselves to believe that there is no such word as fail, and with so many men of genius at work perfecting the details of this new agent of intercommunication; with so much capital eager to back their enterprise; and with so much organizing talent and executive ability as is displayed to-day in the telephone business, the great invention of Alexander Graham Bell is springing forward to success unparalleled in the history of scientific discovery.

The sweeping changes in the *personnel* of telegraphic officials, which seem to have just commenced, have their lessons for all to read and learn. Many a broken-spirited operator, here and there throughout the country, will view with grim satisfaction the unceremonious sweeping away of some bragging, bellowing and worthless parvenu official, who for years has elbowed his way through the world, in total disregard of the rights of others. The lesson is a wholesome one. To be finally enslaved in the net in which you have enslaved others is the natural, and nearly certain, punishment of insincerity and tyranny. It is a bitter penalty, and the culprit is not altogether without our sympathy, but it is eminently proper that it should turn out just so, and that the base, the hollow and the untrue should endure the suffering which they have themselves inflicted upon others. The coming generation of telegraphers may profit by the lesson. If, however, the lesson stopped here we might point the moral, but it has gone further. There have been some dismissals, apparently without cause, of men who have seen from 30 to 35 years' hard service. Here is an old man, incapacitated by prejudice, inclination and his long daily drill from any other kind of work, suddenly thrust upon the world to commence life over again; and, as far as we can see, without cause. Growing boys have been emulating that man's actions, in the hope of being as well rewarded in their old days as they thought he was. His whole life has been transparent to every one. He never sawed a pole in all his born days; his word has been reliable;

his attendance constant, year in and year out; his work excellent, until, perhaps, the past year or two, when the tell-tale trembling pen showed that his grip was not quite so firm as it used to be; his general character has been sturdy, firm and entirely trustworthy. So the old fellow has lived on in peaceful anticipation of being able to provide to the end for the stern necessities of food for the little ones and rent and clothing, so long as he approximated that standard. He has expected no unusual severity, because he could not be guilty of it himself; he feared no extraordinary crucial test of his fading glories, because he deserved none. Having sown the seed in fruitful ground, he looked forward only to the golden harvest; and, having cut the grain, he sees another hand stretched forth to bind and carry off the sheaves. When hard work has quenched the natural brilliancy of his mind, when the old fingers cramp with a little less work than they used to do, and his good old head has become white in the service, it is hard for him to be compelled upon short notice to leave the scenes which, by 25 or 30 years association, he has regarded as consecrated to himself. Prosperity should be made something more than a dream to our youth, if we would have good workers; but where is the hopeful lesson for them in the spectacle of the old man tottering home to tell his aged life companion—the grieving wife—that his years of life have exceeded his years of efficiency? What encouragement is there in this for the youthful, gifted and ambitious tyro? This is a question which should be best answered by those who have the benefit of the service nearest at heart, and who have staked their reputations upon purifying, elevating and systematizing it, for the ultimate good of all.

TELEGRAPHERS have long since regarded their business as a profession, and it is a question now if it is not high time for us to draw together as such, and by forming a little "consolidation" of our own, recognize our own importance as a corporate body, and develop some of the self-assertion which seems to be inherent in every corporation. The greatest evil which has assailed us thus far is the large increase of late years in the number of telegraphic "colleges," not to mention the vast number of private "students" taught for a few dollars a head, principally by railroaders and men who are themselves generally a disgrace to our profession. In this way young boys who have been taught to consider it disgraceful to work, and who are too ignorant or too stupid to attempt something higher, take up telegraphing as a "genteel" occupation, and are encouraged by poorly paid operators, who "teach" them for the small fee which they receive in return. To lower the standard of ability and intelligence in a profession is to lower the respect which every intelligent person must feel for it, and it is certainly not going too far to insist that a censorship be exercised over the enlistment of apprentices, to the extent at least that they must be possessed of a fair education and a moral character. This is a subject which more than anything else concerns our salaries, as well as our own respect for the occupation of a telegrapher; and, we doubt not that if the matter be gravely considered, we shall find, in view of recent developments, that the time is ripe for a simultaneous, concerted movement of all the operators in the country to form an organization which, without the aid of grip-signals and dark-lanternism generally, will purify the profession, and lift it above the level of the common store-clerk.



A step in this direction has already been taken by the railroad operators employed in Jersey City, and they have our hearty sympathy in their efforts.

THE exploded story that some absurd old Pennsylvanian, Daniel Drawbaugh by name, invented the telephone in 1867, is again going the rounds of the press. It is not long since the *Pekin Gazette* claimed that the telephone was known in China in the year 968, having been invented by King Foo Whing, a distinguished philosopher who flourished about that time. It was also, the gossips say, described by Robert Hooke, F. R. S., 214 years ago; and, now, forsooth, we must place the laurels upon the head of this ancient president of Milltown, Pennsylvania. The telephone is persecuted enough, and ought now to be given a chance; for it cannot, like the phonograph, talk back. The Germans tried to kill it with the name of "Doppelstahlblechzungen-sprecher," but it finally came out triumphantly as a "Farnsprecher," and we have no doubt but that it will survive the present attack. As a matter of fact, the telephone is so ridiculously simple that we wonder why it was not discovered centuries ago. It reminds us of Dickens' jail-bird who spent 20 years or so in his dungeon, pining for freedom, and who one day raised the window, which had been unfastened all the time, and stepped out a free man. But, whoever may have *dreamt* of the telephone in years past, let us give the credit of perfecting it where the credit belongs—to Alexander Graham Bell.

IN reference to our statement that the lumbering telegraphic character ————— (ch) is used on the English Morse wires, an English reader of THE OPERATOR writes all the way from London to say: "I have \$50, which, being endowed with speech, says that no such signal is in use in the Postal Telegraph service here, if any corresponding \$50 can be found to say different." We know that the barbarous signal was in use there in 1870, so that it must have been dropped since then; which only goes to prove that in England it takes at least a quarter of a century to discover the utter uselessness of such monstrosities in the telegraphic code. But if our esteemed and wealthy English correspondent wants to stick to the main point; if he has not yet parted company with his remarkable fifty-dollar bill, and if it be still endowed with a similar degree of eloquence, let it assert that a picked team of American operators cannot get through with ten thousand words or so of press matter quicker than an equal number of picked Englishmen, each side using its own code signals. Now, that is a remark which would develop an astonishing amount of fiscal loquacity in every fifty-dollar bill in the Western hemisphere.

OUR cordial thanks are due to Manager Maynard, Col. Wilson, Supr. Tubbs and Messrs C. H. Summers, C. Wilson, A. L. Baker, W. L. Cullen, J. A. Wurzburg, P. A. Rowe, and others, as well as the various chiefs in Chicago, for their kind attentions during our recent visit to their city. No one can say that he has seen a complete, first-class telegraph office who has not closely inspected the admirable inside working of the Western Union general office at Chicago during the day time. The working in every department is excellence itself; and, indeed, we cannot see how it could be otherwise under the guidance

of such a body of courteous and competent officials, and such a well-trained and intellectual corps of operators and clerks. We have no doubt that a similar indorsement might be given to the night force; although, we are sorry to say, the want of cordiality on the part of the person in charge—no doubt, temporarily—toward the representatives of this paper, prevents us from saying so from personal knowledge.

SOME of the men now being squeezed out of the Western Union service are old telegraphic warriors who helped to build it up. They may now transfer their undoubted abilities to the independent companies, actual and prospective; and if these young concerns, conforming to the prevalent fashion, should assume a consolidated form, there may yet be lively times ahead. History is constantly repeating itself. "Reform" is a very fair phrase now, and you can roll it glibly under your tongue, as you show the feeble, gripless old man out of the door. But, as we all go whirling down the ringing grooves of change new transformations occur, and we may once again hear the subtle word "Reform," while the rehabilitated victim says, with a profound bow, "I thank thee, Jew, for teaching me that word."

IN communicating to our government the decree which the French government have passed convoking an international congress of electricians to be held in Paris on the 15th of September, 1881, Mr. George Walker, our Consul General in Paris, echoes the sentiment of every American telegrapher when he says: "I may be permitted to express the hope that the country which gave birth to Franklin, to Morse, and to Henry, and which is now the home of Gray, of Edison, and of Bell, will not neglect to participate in the proposed congress of electricians, and to impress upon it those scientific ideas in relation to one of the greatest forces which modern discovery has furnished to the world, which have received such a remarkable and rapid development in our own country."

IN commenting, in our last issue, upon the summary discharge of so many old telegraphers, we, very naturally, expressed the liveliest sympathy with the man who, having literally "hewn his way through the world," now finds the hands of time set back at least 25 years. There can be no better example of the keen appreciation in our profession of genuine humor of a slightly satirical turn, than is evinced in the questions since addressed to us by several irreverent correspondents asking why, for a better understanding of the fine point, and in view of the recent pole-cutting war, we did not use quotation marks in connection with that highly suggestive sentence—"hewn" his way.

MILLIONAIRE telegraph operators are now met with frequently enough not to excite any special comment, but when we hear of such a one continually doing something to make his fellow-men happy, we take much pride in inscribing his name beside the names of Asa Packer, Ezra Cornell, Peter Cooper, Matthew Vassar and Johns Hopkins. The gift by Andrew Carnegie of a free library to his employes recalls the fact that it is only a short time since he donated \$25,000 for a free library in his native town, Dunfermline, Scotland, and that thirty years ago (1850) little Andrew Carnegie was carrying messages. Later on he was operator at Altoona, Pa., and gradually worked his way to fame and fortune.

CORRESPONDENTS who write to us for information and neglect to give their full name and address, must not be disappointed if we take no notice of their requests. We are always willing to go to considerable trouble to oblige a subscriber, if the information he desires be of sufficient general interest; but we ought, at least, to know who our correspondent is. The same rule applies to items sent for publication. We often receive communications which we should be glad to publish, were it not that the writer has neglected to give his name and address, thus leaving us in doubt as to the trustworthiness of the information he sends.

SINCE Commissioner Fink sat down so heavily upon the wild statements made by Judge Black and Secretary Windom in their ill-advised and hasty effort to catch the popular breeze by leading an anti-monopoly crusade, the Secretary has been exceedingly quiet. He may not have changed his views—we suppose he considered them views—upon the question, but they haven't been quite so luminous of late. His Department, however, takes its revenge, in a measure, with the wicked monopoly by declaring that the rates paid by the government for telegraphing shall be greatly reduced to certain points.

COMING events are certainly casting their shadows before, when we find the electric light companies already competing with the gas companies for the contract to light this city. The bids for lighting the city for May 1 were opened last week, when for the first time an electric light company entered the lists against the gas companies as a bidder on a large scale. The new mayor of Philadelphia, in his inaugural address, speaks highly of the electric light for street illumination, and commends it to the favorable consideration of Councils.

WHAT changes have taken place in the telegraphic world since the death of William Orton, only three years ago. The third anniversary of his death will occur next Friday, the 22d inst. We should not pass over the solemn occasion without recalling the words of Mr. J. D. Reid, in honor of the man who "by his integrity, skill, patriotism and prudence made the telegraph in America the synonym of honor, enterprise and success."

WE expect to be able to publish in the next issue of THE OPERATOR detailed descriptions, with illustrations, of the Chicago police telephone and patrol system; the Haskin's telephone system of Milwaukee and the various manufacturers' exhibits at the recent telephone convention. These articles will be of much interest and value to all readers of THE OPERATOR, but especially so to our telephone brethren.

THE Atlantic cable is rapidly coming into use for the transmission of diagrams and charts. The *Herald's* targets showing the exact position of shots made in international matches across the sea have appeared more than once; but it has been reserved for the enterprising *Graphic* to telegraph the basis for an accurate picture. That journal recently published a "telegraphic picture" of the scene of the murder of the Czar.

IF any one wants to study the proper way to fight a monopoly he may find much food for thought in the lively manner in which the new Mutual District Messenger Co., in this city, is waking up the sleepy old American District.



### The System of the Union Electric Railroad Signal Company—Examination of the System by Railroad Men and Electricians.

By invitation of Mr. J. Gardner Sanderson, General Manager of the Union Electric Signal Company, a party of railroad officials, capitalists and electricians, on Wednesday, March 16, inspected the systems of signals in operation on the line of the Fitchburg Railroad, between Belmont and Waltham, Mass., and examined the Signal Company's overlapping block signaling system, the interlocking of switches with special signals, and the several forms of highway crossing signal bells.

By the courtesy of Superintendent Adams, of the Fitchburg Railroad, a special train conveyed the party to Waltham, leaving Boston at 11:30 A. M. There were present: Mr. George Westinghouse, Jr., President of the Union Electric Signal Company; Mr. George H. Christy, Patent Solicitor and Counsel, of Pittsburgh, Pa.; Mr. Ralph Bagaley, of Pittsburgh; Mr. J. Chester Wilson, Electrician of the Pennsylvania Railroad, Altoona, Pa.; Superintendent Folsom, of the Boston & Providence Railroad; Assistant Superintendent French, of the Old Colony Railroad; Frank L. Pope, of New York, Director of the Union Electric Signal Company; Superintendent Adams, of the Fitchburg Railroad Company; J. Malcom Forbes, of Boston; W. H. Forbes, President American Bell Telephone Company, Boston; Mr. Henry Snyder, Pittsburgh; T. D. Lockwood, Electrician, Boston; Messrs. Edward Cunningham, C. H. Jackson, D. A. Holmes, John H. Sturgis; J. B. Ecclesine, Jr., of the *Railway World*; J. Otis Wetherbee; A. Blodgett, of the Boston & Albany Railroad; D. C. Knowlton, John Hitchcock, Oscar Gassett, and several representatives of the Boston press.

The first stop was made at Somerville, where an examination of the system as it has been in use since April, 1879, was made. Mr. Gassett, superintendent of the company, here clearly explained the working of the system. The track is divided into sections of a mile, more or less, with one cell of battery at one end and a signal at the other—one pole of the battery is led to one rail and the other pole to the other rail. The signal is also similarly connected, one wire to one rail and one wire to the other. The rails are not insulated in any way, except at the ends of the sections; one section is insulated from the next.

The signals are placed about 200 feet within the section, so that when a train enters the section the engine man can see if the signal operates properly. The battery current operates through a coarse wire magnet to hold the signal for safety. When an engine enters the section, a shorter path is provided across the metal of the engine and the signal magnet is demagnetized. The signal, by an ingenious escapement arrangement, then turns to danger. The signals show full face when set for safety, and are turned round edgewise for danger. The facts were rapidly detailed during the brief stay at Somerville, after which the trip was resumed to Waltham, where the signals are newer. The signals here protect the trains until after they have passed a point 1,200 feet beyond the next block signal.

Here Mr. Gassett explained the interlocking switch. It is impossible to turn this switch when a train is approaching, as a magnet inclosed in the switch box becomes demagnetized when a train is on the section and permits its armature lever to drop into a slot on the switch shaft, and there locks it. Two of these switches were shown at Waltham, with their method of operation. If it is absolutely necessary that these switches should be turned, means are provided whereby they may be, by moving certain levers in locked boxes. The highway-crossing signal bells were also inspected. Close attention was given to Mr. Gassett as he explained the various devices and much interest was manifested by the gentlemen present.

At the conclusion of the inspection a neat and tasty lunch was served on the train, after partaking of which the party returned to Boston. A hasty examination was then made of the company's factory at No 82 Canal street, where the nucleus of an extensive business may be seen. The principal patents owned by this company are those of Robinson, Pope and Gassett.

T. D. L.

### New York Electrical Society.

At the regular semi-monthly meeting of the above society, in the Chemical Lecture Room of the Cooper Union, on Thursday evening, April 7, Geo. B. Scott, Superintendent of the Gold and Stock Telegraph Company, lectured on "Electrical Measurements with the Wheatstone Bridge."

The lecturer first constructed a galvanometer with some common sewing needles, which he magnetized by placing for an instant across the poles of an electro-magnet, a piece of cork, in which the needles were placed; a thread of silk, a broom straw, some sealing wax and a piece of magnet wire.

With these materials a very sensitive instrument was put together which the lecturer used in his subsequent experiment. On a large wooden frame the connections of the bridge were run, and the methods of measuring resistances when placed in one side of the bridge practically illustrated. To show how sensitive the galvanometer was to slight changes in the resistance of the connecting wires, Mr. Scott held a lighted taper to one of the wires until a section of less than an inch in length was heated, when the needle of the galvanometer was strongly deflected.

At the conclusion of the lecture, President Jones and Prof. P. H. Vander Weyde gave some interesting information on the subject before the meeting. After a vote of thanks to the lecturer of the evening, the society adjourned.

Eighteen new members were elected. The total membership is now 240.

### The Development of the Telegraph Pole.

It is somewhat strange that people who have a passionate regard for whatever grows rapidly and large do not occasionally steal a moment from the great West and the big elephant, the street-cleaning swindle and the cheek of the ticket speculator, and contemplate the telegraph pole of the period. A quarter of a million people can remember the time when telegraph poles in this city did not overtop second-story windows and were small enough for a single man to lift; but they have gained altitude and rotundity so fast that from some that now are going up two or three respectable saw-logs could be cut and still leave enough to start a kindling-wood factory in business. The size may seem at last to have found its limit through the inability of our Eastern forests to grow taller trees, but the companies still have the giant redwoods of California to fall back upon, or they can put up poles in two or three sections, like the masts of ships. There was a time when the poles were seen in only a few streets, but now they are as widespread, numerous and ornamental as unemptied ash barrels. Once the tiniest child playing "peep-bo" could not find a pole big enough to hide it, but now the footpad who cannot conceal himself behind any specimen of the new crop of telegraph poles has grown stout enough to earn an honest living by joining a museum in the capacity of the modern Daniel Lambert. If, however, the size of the poles is to increase as rapidly as it has heretofore done, the biggest trees will soon be too small; the companies should therefore begin to consider the propriety of replacing poles by towers, of the lighthouse pattern, with rooms to let inside. The public would not object; people who allow a city to be disfigured by thousands of great logs on end are spiritless enough to stand anything.—*N. Y. Herald.*

### From the Pacific Coast.

To the Editor of The Operator:

SIR: All quiet along the Pacific! We have heard of the untimely end of the American Union (which, for the benefit of readers over the sea—or half seas over—we will explain, does not mean the American nation), and, although our grief is just precisely as deep as it should be, yet we are not entirely inconsolable, for it is a species of sorrow which has come upon us before, and consequently we were not entirely unprepared for the "dire misfortune of its taking off." (Forgive me, immortal William, but,

really, your way of expressing it is just a little bit too strong for the occasion!)

'Tis true that we had a considerable stock of hope invested in this promising infant, whose youthful vigor and lusty strength at a very tender age appeared to indicate that he would make things lively for a certain conglomeration of "bloated bondholders," who were not conducting themselves in a manner that commanded our respect, or that was calculated to arouse our loyalty to a state of fervent enthusiasm; but a little reflection had brought to our mind the axiom that "the good die young," and so, when the American Union ceased to be, our stock of hope merely went down about a hundred per cent., and, as we had been buying on a margin through our broker, Fate, we found ourselves bankrupt—but only for the time being!

Short lived, as it unfortunately was, the American Union probably accomplished some good. It gave employment to a great many operators, and it showed the Western Union Telegraph Company two things: "First, that the people are not only willing, but eager to give their support to an opposition company; and second, that the Western Union Company does not possess the undivided loyalty and respect of one of its employes out of a hundred! The Western Union has been deserted by many of its best men in the hour of need, and until the policy of that company undergoes a radical change it need never expect to be able to depend thoroughly upon the men upon whom it really is dependent for perfect success.

Telegraph operators are not a particularly unreasonable lot of human beings, and when, almost without exception, they express dissatisfaction at the narrow-minded, illiberal and short-sighted policy of the corporation which employs them, it may safely be taken for granted that there exists a cause, in fact innumerable causes.

The immaculate "Board of Directors," who sit in the city of Gotham and issue their edicts, from which there is no appeal; whose sole idea of a wise financial policy is exhibited in schemes for the reduction of expenses, and who evolve periodically from their gigantic intellects such ingenious "rules and regulations" as delight the heart of him who loveth "red tape," and make miserable the unhappy manager of a cross-roads office, whose monthly receipts of a dollar and a half, or thereabouts, have to be spread out all over the surface of 92 blanks, or less—these all-powerful individuals seem to labor under a delusion that the average telegraph operator is an aspiring, ambitious, revolutionary, socialistic and communistic individual, who must be kept down beneath the iron heel of power, or he will eventually rise up and swallow the potential magnates whom nature created to rule over him!

This is a mistake, gentlemen, 'tis true we have a lean and hungry look, but just increase our salaries about 20 per cent., and see how fat, contented, and consequently happy and harmless we will become!

Here, upon the Pacific Coast, are two great corporations working side by side—the Western Union Telegraph Company and Wells Fargo Express Company. The employes of both companies are men of equal intelligence; in many cases the positions of telegraph operator and express agent are filled by the same individual. In the case of the first-mentioned corporation there is no sympathy at all between employer and employes, and no bond of union, except the mere question of dollars and cents. The employes of the telegraph company universally express discontent and disgust at the policy pursued by the corporation employing them; the employes of the express company are, with, possibly a few exceptions, loud in their praises of their employers, and the liberality which characterizes the whole policy of the corporation for which they work. This marked con-



trast is the direct result of some cause, and not because one set of men are unreasonable and naturally discontented and rebellious, while the others are just the reverse. A few of the points of difference between the management of the two companies may profitably be noted: First. The employé of the express company is reasonably certain that as long as he performs his duty to his employer he will not be dismissed upon the mere recommendation of a subordinate official and without cause. Second, he is morally sure that in the event of a vacancy which shall afford an opportunity for his promotion, his claims will be considered first in preference to those of some well recommended individual from the other side of the continent, for true civil service reform must, like charity, begin at home. Third, should he be injured in the performance of his duty, he will be cared for by those in whose service the injury was received, and if in any emergency he does more for his employer than the strict terms of the unwritten contract require him to do, he knows that his conduct will be appreciated. Fourth, if he has charge of an agency and orders from the supply department a box of pens, that quantity is sent to him promptly, instead of his receiving a half dozen of the company's "best," with a note to the effect that the business of his office will not warrant a more liberal supply during the present depressed condition of the company's finances! Fifth—but it is useless to multiply the points of contrast. It can readily be seen that one company bases its hopes of success upon and regulates its conduct by certain innumerable and inflexible rules which do not admit of the idea that it is possible for its operators to do anything right unless they are compelled to do so, and only considers it necessary to wind them up with a salary at regular intervals; while the officials of the other company bear in mind the fact that its agents, being men, must be dealt with in a manly manner, and that a considerate and generous policy, financially and otherwise, is the only one that possesses the necessary requisites of permanent success.

There has been some new life infused into the management of the Western Union. Officials who have been out of it for a few years have returned to it again, and as they are men possessing a reputation for liberality, which it would be base flattery to accuse the old board of managers of possessing, we have some hope that we shall soon experience some tangible symptoms of reform. The company here and elsewhere has a few minor officials who are naturally disposed to do justice to the employés under them, having risen from the ranks themselves; but they are tied down by that all-potent and infallible "Executive Committee," and possibly some superintendents of divisions, so that they are practically powerless.

Well, we shall live in hopes that salaries which were reduced by that "sliding scale" will be raised to the old figures, and that the reductions which have been systematically made upon the Pacific Coast since that time will be succeeded by a general increase of wages, and we assure the "Executive Committee" that the experiment will pay. Still we are not willing to wager a very large amount that the said committee is experimentally inclined. But we shall see what we shall see, and when that increase of salaries does come, we promise to bear it with becoming fortitude.

PACIFICUS.

FEB. 22, 1881.

### Reasonable Hours of Labor Tend to Subserve Corporate Interests.

To the Editor of The Operator:

SIR: The American District Telegraph Company have at last begun to realize that, in the long run, the only safe and judicious course to pursue in their relations with their messengers is to treat them with fair play and justice.

They appear to have awakened to this fact. Whether they deserve any credit for the awakening or not is hardly worth discussing. The many exposures in the past may have had something to do with it, and perhaps the appearance of a rival, in the shape of the Mutual District, may have had a little something more. However this may be, the fact is patent to the most casual observer. There is an improvement for the better. There seems to be a tendency, and an effort made to secure good service, by the only proper

and legitimate means that should be used for that purpose; namely, reasonable compensation, reasonable hours of duty, and a system of discipline, intended to weed out the worst elements with the least possible delay.

That this scheme will be eventually successful, depends very largely on the character and capacity of the men in charge of the offices. Any one walking into a district office, and taking a cursory glance around would be apt to arrive at the conclusion that it requires but a low order of talent to take hold and run the concern.

It does appear at first sight to be a simple matter; but it is not. A fundamental rule is that he who is not capable of governing himself is not competent to act as a guide to others, and this applies with double force to a district manager.

He must not only be able to keep his own temper under subjection, but he must be also capable of maintaining order and obedience by a strict and impartial meting out of justice in the almost innumerable cases that are constantly arising. Even if this were the only duty required of him, his task would be by no means an easy one.

He is, however, expected to answer police, fire and burglar alarm calls. Oftentimes the former calls are sent in either through ignorance or a spirit of malicious raillery on the part of the subscriber. Then he receives orders for coal, orders for theatre and opera tickets, which must be procured by telegraph from the executive offices, and the blanks filled up while the customer waits. The telephone also takes up some of his attention and time. Orders received for the district express likewise require looking after.

Then, again, there are complaints of all kinds from subscribers whose calls are not promptly answered; when they are answered and the service is not satisfactorily performed; when the messengers do not follow the instructions given, and when they sometimes, in a fit of absent mindedness, forget to deliver valuables intrusted to them.

The victims find a suitable target for their wrath in the district manager. The trouble does not end here, however. The Western Union delivery is a prolific source of agony for the district manager. There must not be any delays; there must be no failure to deliver the messages to the proper parties; there must be no sharp practice in connection with the collections; in fact, through the stupidity of some messengers and the carelessness of others, this branch of the service by no means tends to lessen the district manager's cares.

Even if *this* were all, his position would not be an enviable one. While he is trying to keep on good terms with the public, and avoid complaints as far as lies in his power, or to offer some kind of explanation for those that are unavoidable, he finds it necessary to keep a sharp lookout that he doesn't come in conflict with his superior officers. This requires long experience, no small amount of tact, and no end of dodging.

The inspector's instructions must be carried out; the solicitor must be soothed and listened to; the superintendent of the messengers demands attention; the assistant superintendent calls for respect, and the general superintendent must be obeyed.

By a wise provision and prudent forethought the district manager, if he is a conscientious, sober, and capable man (and there are many of them just such), finds it possible to attend to all these multifarious duties and cares during the period of twelve hours that he is allowed to remain on duty.

He reports at 8 A. M. and is relieved at 8 P. M., his relief filling in the other twelve hours. He doesn't require any recreation, hasn't got any home, no family ties, nothing, in fact, except an insatiable desire to be constantly in the harness—to be always on duty.

It would be an experiment well worth trying, and one that would unquestionably show good results in a short time, for the company to curtail the hours of labor. It must be understood that there is no lunch hour, half-hour or any relief whatever until the day is done.

The little additional expense necessary to effect the change would be trifling in the extreme in comparison with the added interest each man would feel bound to take in his work, to the increased advantage of the company. Something

ought to be done in this direction, and it is to be hoped that it will be done at no late date.

TOM TANGLE.

NEW YORK, April 8, 1881.

### Chicago Notes.

To the Editor of The Operator:

SIR: The new order of things in this city resulting from the consolidation will soon be fixedly settled. The transfer of wires, material, operators, managers, etc., is about over. The manager's office, adjoining the operating room of the W. U., has been closed out and the partitions torn down, connecting it with the operating room. The additional space is to hold the metropolitan or city line wires. The manager's office is now upon the next floor below.

Western Union resignations.—Col. J. J. S. Wilson, Supt.; C. Wilson, Assistant Electrician; E. D. L. Sweet, Manager Board of Trade, and Col. Lynch, Supt. Supply Department.

Installments to fill above places.—F. H. Tubbs (late of A. U.), Supt.; Mr. Vigus (late of A. U.), Manager Board of Trade lines, and Steve Robinson, Assistant Manager, do do.

Transferred from A. & P.—Messrs. Robb, Dyer, Spencer, Miner, Wilby, Derrickson and Mrs. Prescott.

Messrs. John O'Brien, Everham and Dorval have been changed from day to night force. Mr. Frank Brown, late of Western Union, this city, recently died of consumption, at his mother's residence in Walkworth, Ohio. His demise was surprisingly sudden. He was with us, apparently not in an alarming condition, only a few days before news reached us of his death. His old associates here extend sympathy to his relatives.

The new régime at this point is in some respects distinguishing itself in a most able-bodied manner. Among other late and notable hits may be incidentally mentioned these: One of our best and most reliable operators, while receiving overland messages from Omaha, accidentally received a duplicated number (an error of the Omaha operator) which escaped his notice. For this he was called before supreme authority and suspended ten days, and was informed at the same time that the punishment was considered light in comparison with the gravity of the offense. Another equally reliable man has been suspended for ten days for duplicating a number in sending. It has been given out officially, that "the duplication of numbers must be stopped, although every operator in the office should be discharged." The work will doubtless go bravely on. It is to be hoped, however, that the management will not, as is sometimes the case, draw any lines of distinction. If these actions are to be continued there is not a man in the office who would, if found delinquent, feel at all grateful for any special favor or exemption.

Your correspondent does not feel called upon to report by whose particular inspiration these movements are instituted. He simply records the facts as being, perhaps, of interest to those of the fraternity outside of Chicago's sacred precincts—particularly among those who are in daily or nightly communication with our office. There has been considerable feeling manifested in these cases among operators, as also among lesser officials; and some of the comments, you may believe, have been of a nature neither moderate nor flattering. It is, of course, not to be supposed that these attentions on the part of the authorities will be accepted very gracefully, as rewards of merit. Rewards of merit are evidently not in order at the present time. The purpose seems only to move with overwhelming severity in efforts to make every operator an infallible machine that may not err under any conditions whatever. An impossible undertaking certainly; yet, anticipated results seem to have justified the attempt in the minds of the executives, and we therefore await with painful interest the outcomes and conclusions.

CHICAGO, April 7, 1881.

### Operators' Opportunities.

To the Editor of The Operator:

SIR: It is discouraging to note that while operators often eagerly leave their situations when they can ill afford it, to go about the country seeking employment at higher wages, or become



discouraged and work in a spiritless and grumbling manner, as if the future contained no possibilities or opportunities for better things, they seldom give serious attention to the surest and most far reaching way by which they can ameliorate their condition, which is by constantly acquiring helpful knowledge and making daily practicable application of it.

How many operators ever stop to deliberately weigh the question: What can I do through my own individual, unaided efforts to live more happily and comfortably on my present wages and in my present circumstances? Do not most of these men occupy their spare moments in thinking out the problem how they can obtain relief? They do not seem to realize that individuals are seldom surrounded by such adverse circumstances in this world that they are left without some opportunities right at hand by taking advantage of which they can improve their lot.

For instance, an operator having a small family, after obtaining his salary at the end of the month, instead of paying off his bills contracted during the month for the support of himself and family, becomes associated with a fellow operator and wanders away to the haunts of vice and intemperance, and perhaps before he awakens from his lethargy one-third of his month's earnings is wasted, and his family receive no benefit from it.

Operators must come to understand that, as a class, they cannot command the full sympathy and respect of society until they cease to squander hundreds of dollars annually in dram shops, instead of buying with this money bread and clothes for their needy families. They must also be impressed with the importance of laying by what savings they can, so that they may become, to a certain extent, independent of their employers, and if not fairly dealt with by the latter can feel that they have the means to live on until they can obtain employment elsewhere.

J. A. H.

BALTIMORE, Md., March 21, 1881.

### The Eastern Telegraph Company of Maine.

To the Editor of The Operator:

SIR: The Eastern Telegraph Company (recently chartered in Maine) comprises the most eminent State, railroad and bank officials in the State, and also some of the most important business firms, and those connected with other local industries. Their franchise is a very liberal one indeed, permitting of their using any railroad or highway, entering any depot and the minor privileges, making this probably the broadest charter ever issued in the State. With this extraordinary privilege, and unlimited means for the extent of territory proposed (namely, a duplicate of Western Union lines from Bangor to Boston), it is not surprising that the company should be regarded with favor by any other company with whom they seek connection.

A committee of five gentlemen was appointed by the Eastern Company to meet in this city, Friday, April 1, the representatives of the American Rapid, Bankers & Merchants, Mutual Union and States Union companies. The first named company was not represented, which was attributed to the fact that the papers in pending injunction suits had just been served upon them. Their method, tariff and plant were fully investigated, however, resulting in the conviction that their system and tolls could not be adjusted in an equitable manner with the system and rates which the Eastern may determine upon. The committee was not satisfied that the patents were either profitable or practical. The Bankers & Merchants Line was not represented, having had but very short notice and not being fully organized. A correspondence is in progress, however, which may lead to something tangible with this company. The only company which produced any evidence of strength and promise of future growth was the Mutual Union, whose status was regarded with great favor by the Eastern Company. President Evans stated that the Mutual Union was not doing a public business, but that connections with exchanges and other companies could be formed over his lines. The "States" Union is not an organized company, but the originators possess valuable franchises which they seem to have no immediate intention of utilizing. Further negotiations with the Mutual Union is probable, and may

terminate in the leasing of some New York lines, for the purpose of securing to the Eastern Company an outlet for its business.

MAGAZINE ST., ROXBURY, Mass., April 3, 1881.

### Baltimore Notes.

To the Editor of The Operator:

SIR: On April 1 all the A. & P. offices in this city were closed and instruments transferred to the Western Union Co. The Domestic District Tel. Co. has transferred its messenger service to Continental Co., W. A. Dunn, Manager. These changes are due to the consolidation of the telegraph companies. Walter H. Stewart, for eight years Manager of the late A. & P., and who has been actively engaged in the telegraph business for the past nineteen years, has been appointed General Manager of the American District Co., vice Geo. F. West, resigned. Mr. West was an able manager and was highly esteemed by the merchants in his district. The Board of Trade (Mr. E. H. Cole, Manager) closed on the first, much to the detriment of the members of the Corn Exchange, as this company worked through wires to New York, Chicago and Toledo. Mr. Cole will doubtless go into other business. The American Union is still doing a good amount of business, notwithstanding rumors have gained circulation to the effect that there is to occur a general shaking up of dry bones in the operating department soon, but nothing definite is known at present. Mr. T. W. Lufrio and W. Lenz have resigned their positions in the A. U. J. A. Greenwell, of the A. & P., succeeds Mr. Lufrio. J. A. Beck has been appointed operator at Bayview Junction, P., W. & B. R. R.

The new Stock Exchange will be completed by May 1. The Gold & Stock Telegraph Company is arranging for several direct wires to New York for the transmission of quotations direct instead of relaying at the W. U. main office as at present.

EXCELSIOR.

BALTIMORE, April 11, 1881.

### Milwaukee Melange.

To the Editor of The Operator:

SIR: Beyond the closing of the Atlantic & Pacific and American Union offices in this city, nothing of importance has occurred since our last communication. The Board of Trade headquarters are now with the W. U. Chief Barker is again laid up with rheumatism, Night-Chief Fitzgerald taking his place, and Mr. Brady going on the night force. Mr. Barker has the sympathy of the boys in his affliction. Mr. Fitzgerald has lately come into possession of a wee specimen of humanity—a daughter. Mr. W. H. Mayher, formerly "rep." opr., has been appointed W. U. Night Chief, vice Mr. J. N. Bradley, resigned, to accept a more lucrative position at Chicago in connection with the St. Paul Pioneer Press. Mr. E. G. Toombs, late of the Board of Trade telegraph, Chicago, is a late addition to the W. U. night force. Mr. H. P. Nelson, erstwhile of the A. & P., is now with the W. U. The Milwaukee District now reigns supreme at the A. & P.'s former quarters. The A. U. still holds out at "the old stand."

A horny-fisted seven-foot granger-operator, an aborigine of the wilds of North Wisconsin, made his appearance here recently and a committee was appointed to attend to him. He was placed at a table to receive a special from his native haunts, and after about an hour's work completed his task, the special being a highly edifying account of his own "abduction," giving a full description of his personal appearance, etc. The special has been preserved and is now on exhibition.

It appears that Young America in Chicopee, Mass., is not as well up in the mysteries of telegraphy as the average city gamin; for a wag of that town seems to have had it all his own way in fooling the Chicopee small boy. He sent the lad to the telegraph office to have a nail keg dispatched by wire. The operator refused to send it until it had been painted, and when the boy returned with the keg done up in colors, objected that it was then too late, and instructed him to have it telephoned from a neighboring grocery. The grocer said that his instrument was out of order and sent the boy to a hardware store with a note reading "Kick me out," which request was promptly complied with.

## TELEPHONE DEPARTMENT.

Brantford, Ontario, proudly claims parentage of the telephone, since it was at that place that Professor A. Graham Bell made his first experiments.

Telephone exchanges are now being established in Chelsea, Malden and Everett, Mass. The three cities will be connected with each other and with Boston.

There are many complaints coming in against the telephone service in this city. Heavy charges and slow work appear to be the gravamen of the complaint.

Mr. Henry Goodwin has been appointed manager of the Rio de la Plata Telephone Co.'s exchange at Buenos Ayres and Montevideo, and will superintend the construction at both cities.

John Dooley, a lunatic confined in a Philadelphia asylum, labors under the strange delusion that he is a telephone. He is continually answering calls, and receives imaginary messages from all parts of the world.

The *Electrician* says that the English Post-office Department and the telephone companies have come to an agreement on the basis of a payment of ten per cent. of the receipts of the companies as royalty to the Post-office.

A woman in Maine, attempting to talk through a telephone for the first time, exclaimed, "How do you do?" and then dropped into a chair, protesting that she "couldn't say another word; she felt as if she had been talking to a ghost."

W. H. Lincoln, late night inspector and operator of the Boston Telephone Despatch Company, at the Stock Exchange, that city, has accepted a position as assistant manager of the Portland Exchange of the National Bell Telephone Company of the State of Maine.

The Telephone Exchange at Sheffield, England, intends to ask the town council to allow them to fix a microphone in the clock tower of the Town Hall, so that any subscriber may, on calling to the central office, have his wire switched to the Town Hall wire, and so hear the clock strike in his office any hour of the day.

The Chinese alphabet is so peculiar that there is great difficulty in devising any practicable systems for conveying telegraphic messages. The telephone, therefore, is received with peculiar favor by the Chinese Government, which has at length decided to establish a complete system of telephones throughout the country, commencing north of the Yang tse Kiang.

The stock of the Continental Telephone Company now stands at \$175 per share. They have just organized a subsidiary company in South America entitled the Rio de la Plata Telephone Company, with a capital of \$500,000. The object of the latter company is to establish exchanges at Buenos Ayres in the Argentine Republic, and at Montevideo in Uruguay. Buenos Ayres, which has a population of 400,000, will be connected by cable with Montevideo, which has a population of 100,000.

The annual meeting of the stockholders of the American Bell Telephone Company was held on Tuesday, March 29. The Treasurer's report was received, and showed the financial affairs of the company to be in a highly prosperous condition. The report of the President showed that, while at the beginning of the fiscal year the company had in operation 138 exchanges and 60,873 instruments, at the present time no less than 408 exchanges were in operation, or were about to open, and the number of instruments in use had increased to 132,692. The President further stated that in the United States only nine cities with a population of over 10,000, and only one city of over 15,000, was without a telephone exchange. It was also intimated that the company was earning a fair dividend. The following directors were elected: Francis Blake, Charles P. Bowditch, Charles S. Bradley, Geo. L. Bradley, Alex. Cochrane, Richard S. Fay, Wm. H. Forbes, Charles Eustis Hubbard, Gardiner G. Hubbard, William G. Saltonstall, Thomas Sanders and Robert B. Minturn.

Mr. W. H. Ash, writing from Penzance, England, in a recent note to the *Electrician*, says: "There are two cables landing here, one from Vigo and the other from Lisbon, both of which were, unfortunately for us, broken at the same



time, the former in Vigo Bay, the other about 735 miles from here. Generally one or the other is always occupied, so that any experiments of this description are not possible, but being both idle, as well as our land line, I joined the two cables together here through a telephone. The other two ends being so far away I was curious to know what I should hear, and was very much surprised to hear Morse signals. After listening some time I found it was on the Brest cable of the new French Atlantic Company, their line running from Penzance to Brest (the cable lands about three-quarters of a mile from here), and their land line going to Penzance by a different route from this company's. So that with no earth connection here, and none on the other line except at Penzance and Brest, I could read the signals distinctly. No doubt it was by the induced current, but that it can be perceived at such a distance may suggest to some still further uses for this delicate instrument."

## DASHES HERE AND THERE.

Like lightning rods, sweet girls should be—  
Cool, pointed, straight, exacting;  
Drawing the sparks—yet not too free,  
Nor harmed by their attracting.

The interior of Windsor Castle will be shortly illuminated by the electric light.

The telegraph office was destroyed at Canto Abajo, Cuba, during a recent fire at that place.

At the Paris exhibition of Electricity, M. Salignac will exhibit a plan for cooking by electricity.

A number of cities are about to adopt the electric lights, so that the people can see where the gas lamps are at night.

A copy of Dr. Sanford's Treatise on the Liver can be had free by mail on application by postal card or otherwise. See advertisement.

Entries for the games of the Western Union Athletic Club close on the 1st prox. They are expected to take place on Thursday, May 19.

An electric light machine in London, Eng., recently, caught the clothing of its attendant, Philip S. Thomas, dragged him into its toils and strangled him to death.

MESSRS. J. H. BUNNELL & Co., again draw attention to their Morse Learners' Instrument and other telegraphic supplies, in a full-page advertisement in another part of this issue.

The cable companies on the Asiatic coast of the Pacific Ocean have promised free use of their wires to the Americans who are going thither to determine the correct longitude of places in China and Japan.

A recent investigation, conducted in the physical laboratory of Harvard University, has led to the discovery of the remarkable fact that intense cold can deprive magnetized steel bars of nearly all the magnetism which may have been imparted to them.

The National Associated Press dispatch giving the result of the Cambridge-Oxford boat-race, April 8, was transmitted from the point of the finish to the London agent's office and filed with the Direct Cable Company, who transmitted it to New York in twenty-seven seconds.

Akron, Ohio, is now illuminated by the electric light, having inaugurated that system on the night of the 11th inst. The lights are placed on two towers four-fifths of a mile apart, and at an elevation of 200 feet. A person can see the time by his watch at a distance of half a mile from either tower.

Leonidas of Sparta would have been more successful in his celebrated experiment with "thermopiles" had he used some "batteries" in connection with it. Yet, "currents" are being largely exported from Greece, showing that Greece is still ahead in practical applications of electricity.

Frank Wilkeson, writing to the *Sun* of this city, says that the reason a prohibitive liquor law has found favor in the Kansas Legislature is because the people living in the dry atmosphere of that State, surcharged with electricity, cannot safely regale themselves with alcoholic drinks.

In 1879 the Western Union Telegraph office at Syracuse handled 349,089 telegrams; in 1880, 390,148, a gain of 41,059. During the same

period the Atlantic and Pacific Company's office handled 20,000 and the American Union office 5,000, making a total increase of 66,000 over 1879. The office has twenty-five operators and clerks.

If the Western Union Company should neglect to send delegates to the Paris Exhibition of Electricity, next Autumn, the newly-formed electrical society of this city may prove equal to the occasion, and appoint its own commissioners.

The Central telegraph office at Amsterdam is lighted by the Von Hefner-Alteneck system of electric lighting. The result is said to be very satisfactory, especially as regards the temperature and wholesomeness of the room.

An advertisement of Mr. H. L. Bonsteel will be found in this issue. Mr. Bonsteel is manager of the Dominion Telegraph office, at Newark, N. Y., and devotes his spare time to teaching takigrafy. Those of our readers who desire to study this system, which is warmly recommended by those who have learned it, cannot do better than communicate with Mr. Bonsteel.

Horace T. Brown sends to *Nature* a description of a thermometer which has been made for him, and which, by means of electricity, registers the temperature of distant places. He says of it: "Any number of observing stations can be established along the line wire, and if desired, the apparatus may be made automatically to register the temperature at any required interval of time."

The idea of placing the wires underground is looking up, and a company for that purpose has already been formed in Philadelphia. The wires are to be laid in terra cotta pipes, thus abolishing the necessity of opening the ground to repair defects, as in Germany, where the cables are imbedded in asphalt. In France they are burying the wires between Paris and Nancy in iron tubes.

The *Electrician* presents its readers with an engraving of the longest span of telegraph wire in the world. The wire is stretched across the Kistnah river from hill to hill, each hill being 1,200 feet high, between Bezorah and Sectanagrum, in India. The span is a little over 6,000 feet in length. The only mechanical contrivance used in stretching this cable across the river was a common windlass.

A dispatch from Paris says an unfortunate hitch seems to have occurred in regard to the response of the United States to the invitation to send representatives to the Electric Congress, which is to open at Paris on September 15. It is now proposed to organize a volunteer commission to represent the United States, for which purpose an extension of the time fixed by the French government for receiving applications has been asked for.

Mr. A. B. Smith advertises the Barron Flexible Key Knob in the present issue. These key knobs had a very extensive sale among telegraphers when advertised before, a short time ago, and the universal indorsements they received were of the most unmistakable character. There is no reason why they should not have an equally large sale now. Every one troubled with telegraphers paralysis should give them a trial.

When the report of the death of Sir Evelyn Wood, in South Africa, reached England, a telegram was sent from London to Natal, and the answer was received in two hours. The line extends through southern Europe, under the Mediterranean Sea and the Red Sea to Aden, in Arabia; thence to Durban, and land connections via Zanzibar, Mozambique and Lorenzo Marques. An answer over this line in 120 minutes should put our American District service to shame.

Messrs. Ordway & Co., whose advertisement appears in this issue, make the clothing worn by nearly all the telegraphers in Chicago, and are, therefore, known in that city as the telegraphers' tailors. Readers of THE OPERATOR in Chicago who have not heretofore patronized this firm will find it to their advantage to call upon them when next they want anything in the clothing line. Telegraphers and others outside of Chicago can have samples mailed them free on application.

A dispatch from Vera Cruz, Mexico, on the 5th inst., says: The cable steamer Dacia has completed the first section of the Central and South American cable southward. The cable surveying steamer Hornet is at Acapulco, having taken

very satisfactory soundings for the cable from Callao to Tehuantepec. The Central and South American Telegraph Company has secured all the necessary rights, and will connect with the West Coast Telegraph Company at Callao, establishing cable communication with Valparaiso, Chili.

Perhaps the best linguists in the world are the Danes. They are also nearly as expert telegraphists as the operators of our own Western Union, and that is saying a great deal. Of these two important facts the Chinese Government have become aware, and have, consequently, and very lately, signed a contract with the Great Northern Telegraph Company of Copenhagen for the establishment of a telegraph line between Shanghai and Tientsin, a distance of about a thousand miles. There are difficulties in the way of accurately transmitting messages in the Chinese language which even the telephone fails to surmount.

The London *Times*, of April 8, says:

"Anglo-American Telegraph shares are one-half of one per cent. higher. There was a sharp advance in West India and Panama Telegraph shares upon reports that Jay Gould has arranged a great combination which will include the absorption of the latter line and that the arrangement for pooling the receipts of all the Atlantic cable companies, including the new cable of Mr. Gould, is nearly completed."

A Mr. James Johnstone, of Edinburgh, Scotland, has offered to place \$125 at the disposal of the congress of electricians, which meets in Paris, Sept. 15. This sum is to be given as a prize for the discovery of the nature of electricity, and especially for the discovery of the reason why electricity unites itself into the form of a spark as it leaves the prime conductor of a frictional machine. Any electrician who thinks he can give a better reason for the formation of the frictional electric spark than that of attraction between the particles of electricity on the insulated ball, is requested to give in his answer to M. George Berger, Chairman of the Exhibition committee, Palais des Champs Elysées, Paris, France, before September 9, 1881.

At Toronto, Ont., April 5, judgment was delivered in the case of the U. S. Direct Cable Co. vs. the Dominion Telegraph Co. The facts in the case are that, pursuant to an agreement between the two companies, certain matters in dispute between them were to be referred to arbitration. The Dominion Company appointed Mr. Sampson as their arbitrator, and the Cable Company appointed by cablegram Mr. De Costa as theirs. The latter wanted to get a copy of the submission, and applied for it. The umpire had to be appointed within ten days, and the Dominion Company appointed another arbitrator named Buckley, and he and Sampson appointed the umpire. The Cable Company then took proceedings in a New York court to restrain the arbitrators. After argument, the court decided that they had no jurisdiction, when an application was made for an injunction before V. C. Blake, at Toronto. The latter has decided that the declaration asked for by the Cable Co., which is an English company, should be granted and that the Dominion Company must pay the costs, also the costs of Sampson and Buckley, who were made co-respondents.

## NEW YORK CITY ITEMS.

### Echoes from 195.

"Still struggling at the key?" is the latest salutation among the veterans of 195.

Among those already transferred from the A. U. to 195 are Messrs. Bradt, Waugh, Voyer, Curtis, Kay, Boyer and Cook.

Mr. A. S. Brown has received his reappointment from General Eckert as Superintendent of the Metropolitan (his present) district.

Many of the boys are in active training for the spring athletic games, and the favorite salutation is: "What time do you make it in now?"

All Night Chief Tobin has been able, owing to the influx of ousted talent, to recruit his force so that a great deal of "extra" service is dispensed with after 12.30 A. M.

The effervescing, sparkling freshness of one of the lady operators is noticeable in many ways. The frigid dignity of the lady manager in resent



ing undue familiarity on the part of this maiden has no effect.

Mr. Thomas Finigan was first in grasping the hands of General Eckert and Mr. Jay Gould upon their recent visit to the operating room, and the broad smile in which Tom indulged that day will not soon be forgotten.

The Atlantic and Pacific wires that have just been run into 195 Broadway work very hard, even in the finest weather. In the language of Division Chief Catlin, "to get anything upon them you have to adjust away out into Dey street."

It might do no harm to suggest, in a quiet way, to some of the new men that a too free indulgence in staring at the ladies in the City Department has in many cases, and in one instance very recently, resulted in the starrer taking an involuntary vacation.

Messrs. Clum and Jones, formerly A. & P. chiefs, were assigned to the much-coveted 12 to 9 trick, while Russell Riley does switch duty. Mr. Squires works from 5 to 12. Those men transferred from the American Union were allowed to select their hours, while the A. & P. were used to recruit somewhat reduced and not altogether desirable "tricks."

Mr. Sabine, recently transferred from the Western Union to the night managership of the A. & P., has returned, and taken his former position as Night Eastern Chief, reducing Mr. Mudgett again to the ranks. Everybody will retain the most pleasant remembrances of "Mudge's" short service as chief, and regret that circumstances replaced him.

It is to be hoped that the periodically-discussed subject of ventilation for the main operating room will not die out this time. The most sensible plan we have heard mentioned suggests the cutting of two or more shafts directly through the ceiling and upper floors to the roof. Apropos to the subject, Mr. Jay Gould is said to have remarked to Gen. Eckert, in the elevator, the other day: "We'll tear the building down and put up a new one."

Owing to the increase in business and the opening of new circuits, made necessary by the transfer of the A. and P. wires to "195," Manager Downer has increased his force. Probably 55,000 messages or over are handled daily, exclusive of press reports. The proficiency shown in handling this large volume of business is creditable to the management of the office. The company is now serving the public (in New York, at least) as it ought to be served.

In answer to numerous requests, we again insert the list of games to be contested at the W. U. Athletic Association's spring meeting, to be held on or about May 19:

One-mile walk, for those who have never won a prize; one-mile walk, handicap; 100-yard run; quarter-mile run; 220-yard hurdles, handicap; half-mile run; one-mile run; running long jump. Medals for each event. Entries should be sent to the Secretary of the Athletic Committee, 195 Broadway.

Could the question of a change in the management at 195 be left to the operators, the unanimous vote would be to have the present management retained. Manager Downer is a good executive officer, always shows earnest consideration; quick to recognize and reward merit and overlook the weaknesses of others; always approachable and ready to listen to what the accused has to say in his own behalf. He also takes a hearty interest in all that the operators are interested in; is of a genial nature and, in short, a man that those who work under him hope to see at the head of the operating department as long as he desires to remain there.

There are 41 quadruplex and 11 duplex instruments in use at the Western Union main office, of which the brokers lease 7, Chicago business employs 4 and 3 connect with Boston; Philadelphia, Washington, the Commercial News and cable departments find use for two each; St. Louis, Cincinnati, Cleveland, Buffalo, Pittsburg, Albany, Syracuse, Baltimore, Augusta, Springfield, Providence, New Haven, Norwich, New Orleans, Fall River, and "Bn," Boston, each have one, and the brokers use three more during the summer season. The cities of Chicago, St. Louis, Cincinnati, Detroit, Indianapolis and Chattanooga use one duplex each with New York. There are three "spares," and the city lines

boast of two, one to 599 Broadway, the other to 12 west Twenty-third street.

#### Other City Items.

Mr. H. L. Bailey, Special Inspector M. T. & T. Co., will read a brief paper before the N. Y. Electrical Society at its next meeting, April 21, on a portable and convenient instrument for electrical tests and for experimental purposes to the student.

The operation of the new Mutual District Messenger Company is exciting much interest, owing to the sharp rivalry which has sprung up between it and the old American District. Many of the offices have both instruments, and calls are not unfrequently made on both at the same time, the first boy to arrive getting the employment; this is the cause of many exciting races and adds greatly to the efficiency of the service. As an inducement the boys of the new company are paid in addition to a regular salary a commission on the number of messages.

At St. Francis Xavier's College, on the 31st ult., Rev. C. E. Woodman, C. S. P., lectured on "The Telephone, the Phonograph and the Photophone." The lecturer explained his topic in a clear and popular manner and illustrated the discourse with numerous graphic pictures flung upon a screen and illuminated by an electric light. He traced the history of the discovery of the phenomena of electricity and magnetism, and showed how every new revelation was grasped by the scientist and subordinated to his will in several appliances of mechanical art. At the close of Father Woodman's discourse a complimentary speech was made on behalf of the alumni, and a cordial vote of thanks was tendered to the lecturer. Archbishop Corrigan and many prominent educational officials were among the audience.

#### PERSONAL.

Mr. Fred. Smith, superintendent's clerk at Philadelphia, has resigned.

Mr. George F. Milliken, manager of the Boston (Mass.) W. U. main office, has resigned.

Mr. Heber C. Robinson, Manager of the Western Union general office at Philadelphia, has resigned.

Mr. A. L. Coffy, formerly of Brainwood, has been appointed manager of the W. U. office at Marcial, N. M.

Mr. J. W. Dyer, Manager of the Western Union office at Third and Chestnut streets, Philadelphia, has resigned.

Mr. Joseph Greene, for a quarter of a century connected with the Western Union service in Philadelphia, has resigned.

Mr. F. E. Angell, for many years manager A. & P. Board of Trade office, Chicago, has been transferred to the managership of the W. U. office, Palmer House.

Mr. John F. Zeublin has been appointed Superintendent of the Western Union sixth district, which includes the greater part of Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia, with headquarters at Philadelphia.

Messrs. F. Scott Smith, E. J. Holden, J. M. Sullivan, J. H. Hutchinson and J. H. Burke, operators in the A. & P. Office, Boston, have been each transferred to the W. U. Office, 109 State street, same city. Manager D. J. Hern has gone into other business.

Mr. Charles F. Wood, the retiring assistant general superintendent of the Western Union Telegraph Company for New England, whose service with the company ended April 1, was presented by the employes of his division with a fine gold watch and chain, suitably inscribed.

At a meeting of the Directors of the Western Union Telegraph Company, on the 2nd inst., Mr. Cornelius Vanderbilt resigned as a Director and General Eckert was made a member of the Executive Committee in place of Mr. S. F. Barger, who resigned some time ago.

The Grand Pacific Hotel office, Chicago, is believed to be the champion D. H. hotel office, fully one-third of the business being of this description. Between 43,000 and 44,000 messages were sent from this office last year. Mr. W. E.

M. Browne, the manager, was very attentive to the telegraph and telephone men who attended the recent convention at the Grand Pacific.

Mr. W. E. Jermain has been appointed manager of W. U. and A. U. consolidated lines in Elkhart, Ind. His predecessor, Mr. S. P. Wilcox, is now manager of the L. S. & M. S. Railroad office at that point. Mr. F. Arnold, formerly with the W. U. at Cleveland, O., is night manager of the same office. Elkhart city gives employment to nine first-class operators.

Mr. Patrick J. Feeney, operator at the City Hotel branch office, Portland, Me., has been transferred to Lynn, Mass., as night owl. Mr. Wallace J. Mountfort fills the vacancy. Mr. Ed. H. Smith, operator at "Px" office, Eastern Railroad Depot, Portland, has gone South for his health. John F. Malone, late of A. & P. branch office, Commercial Wharf, takes his place till his return.

Mr. D. J. Hern, manager of the Boston A. & P. office was presented March 31 with an elegant writing desk, with library attachment, from his employes. An appropriate speech was made by Chief Operator Smith, which was replied to by Manager Hern, who thanked all for their kind token of respect, expressed his regret at parting from them, and concluded by stating that his employes had his best wishes.

Miss Lelia L. Morse, youngest daughter of the late Prof. Morse, and Mr. Franz Rummel, the pianist, were married on the 4th inst., at Locust Grove, the summer residence of the bride's mother. There were many presents of rare beauty and great worth, among them a check from Miss Morse's old friend Samuel J. Tilden. The happy couple sailed subsequently for their future home in England.

Mr. Andrew Carnegie, who commenced life as a telegraph messenger in Pittsburgh, and who is affectionately remembered by many old telegraphers, is about to establish a free library for his employes at Braddock, Penna., where his steel works are located. Plans are now prepared for a large three-story building to be erected in Braddock at a cost of \$20,000. The library will consist of about five thousand volumes. The employes had in contemplation the founding of a library on a somewhat cheaper scale, and Mr. Carnegie stepped in and took the project out of their hands.

A Portland correspondent, writes to say, that the remark in the biography of Mr. McMahon, in last issue, that "his wonderful abilities are partly thrown away on the Portland duplex," shows the biographer to be "decidedly unacquainted with the facts." He adds that Operator Saylor, of the Portland office, has handled 500 messages in ten hours on that circuit; that Mr. Stanford, of Boston, has opened with 94 messages between 8:30 and 9:30 a. m., merely as a starter, and that the number sheet on one day last week indicated 964 messages being handled, only one side of the quad being used during the winter.

There was a most enjoyable social gathering at a dinner at "The Criterion," London, on the 23d ult., of the proprietors of and contributors to *The Electrician*. The gentlemen present were: Mr. A. J. S. Adams, Professor W. E. Ayrton, Mr. C. H. W. Biggs, Mr. David Brooks (Philadelphia), Mr. W. C. Cartwright, M. P.; Mr. Latimer Clark, Mr. Crompton, Mr. Brockwell Dalton, Mr. Arenberg (New York), Mr. Desmond G. Fitzgerald, Mr. J. E. H. Gordon, Professor D. E. Hughes, Mr. J. Laister, Dr. O. J. Lodge, Mr. A. R. H. Moncrieff, Dr. A. Muirhead, Mr. J. Munro, Mr. W. H. Parker, Professor J. Perry, Mr. W. H. Preece, Mr. H. E. Saunders, Mr. J. T. Sprague, and Mr. T. P. Bruce Warren. Among the toasts was one to "Absent Electricians of All Lands."

#### BORN.

BALCH.—March 31, 1881, to Mr. John J. Balch agent and operator U. P. Ry., Tie Siding, Wyoming Territory, a son.

#### DIED.

BOYD.—March 26, 1881, at his residence in Forest, O., Mr. N. D. Boyd, aged 37 years.



# All Persons Sending for

Catalogues or ordering articles advertised in our columns will do us and our Advestisers both a great favor by mentioning that they saw the advertisement in

"THE OPERATOR."

## ORDWAY & CO., MERCHANT TAILORS,



205 West Madison St., cor. Green,  
CHICAGO, ILL.

Measures can be left when in the city. Samples forwarded on application.

THE

## American Bell Telephone Co.

W. H. FORBES, President.

W. R. DRIVER, Treasurer.

THEO. N. VAIL, General Manager.

This Company, owning the Original Patents of Alexander Graham Bell for the Electric Speaking Telephone, and other patents covering improvements upon the same, and controlling, except for certain limited territory, under an arrangement with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, the American Speaking Telephone Company, and the Harmonic Telegraph Company, the patents owned by those companies, is now prepared to furnish, upon application, either directly, or through any of its agents, Telephones of different styles, and applicable to a variety of uses.

This Company desire to arrange with persons of responsibility for establishing

### DISTRICT OR EXCHANGE SYSTEMS,

in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as agents, for the purpose of establishing

### PRIVATE LINE

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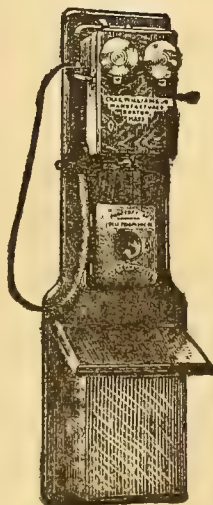
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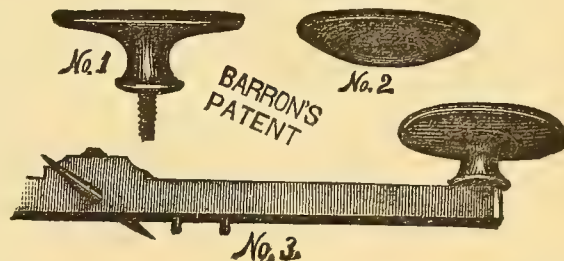
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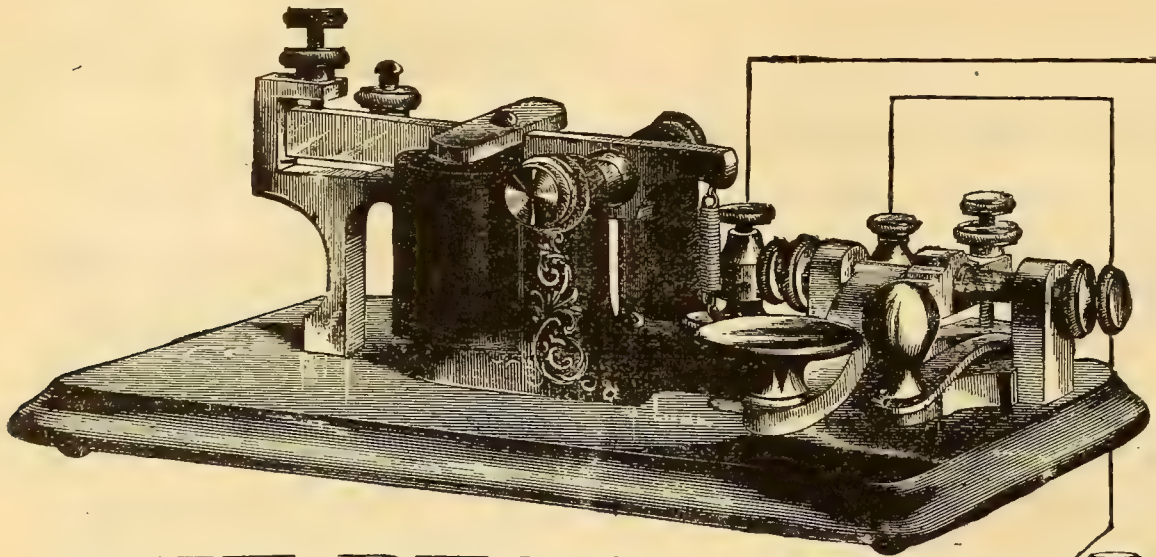
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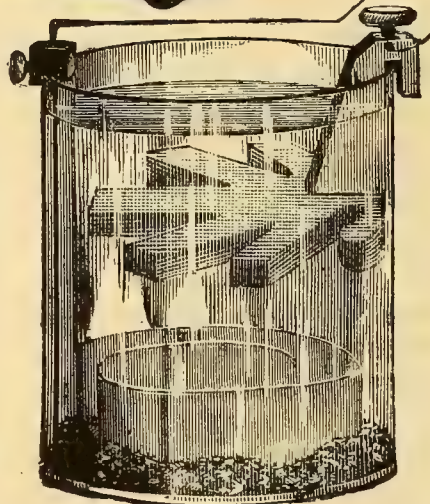


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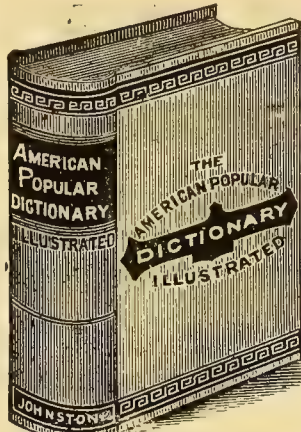
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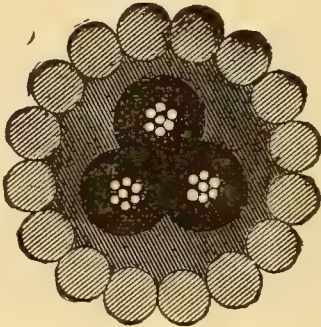
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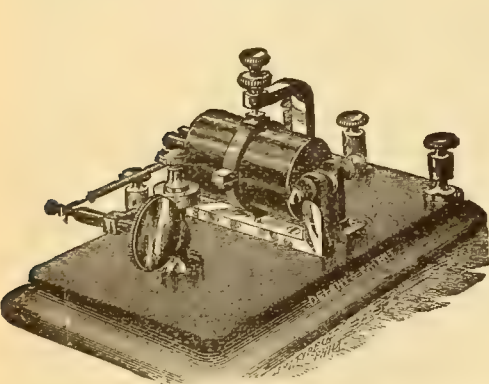
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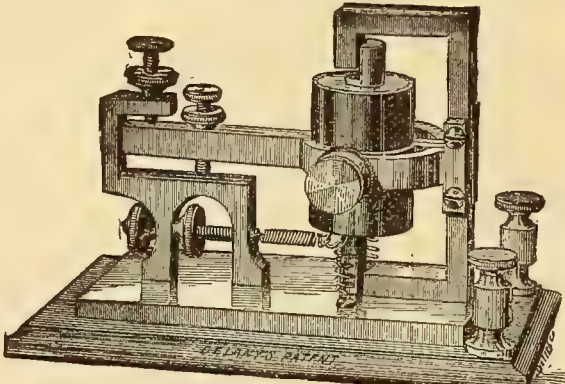
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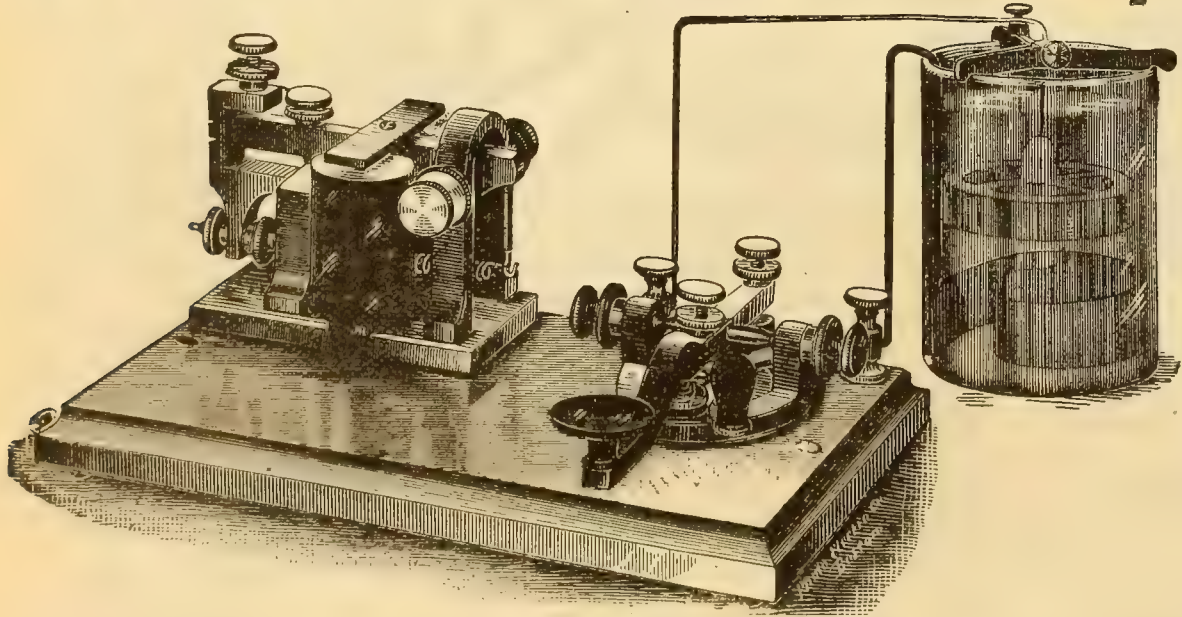
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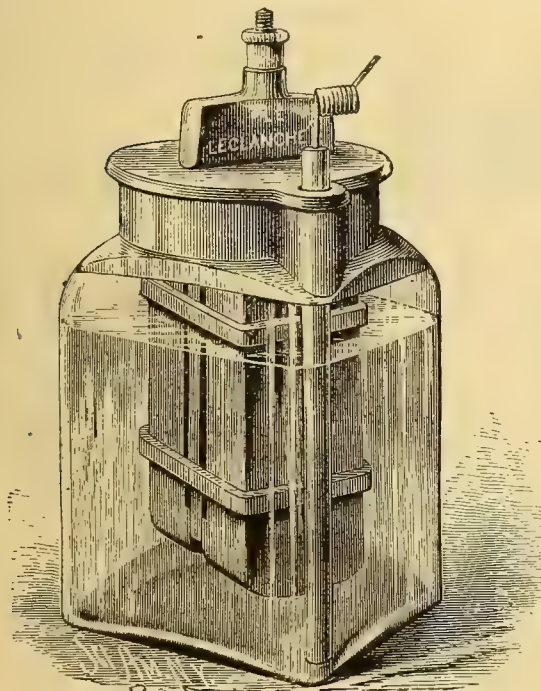
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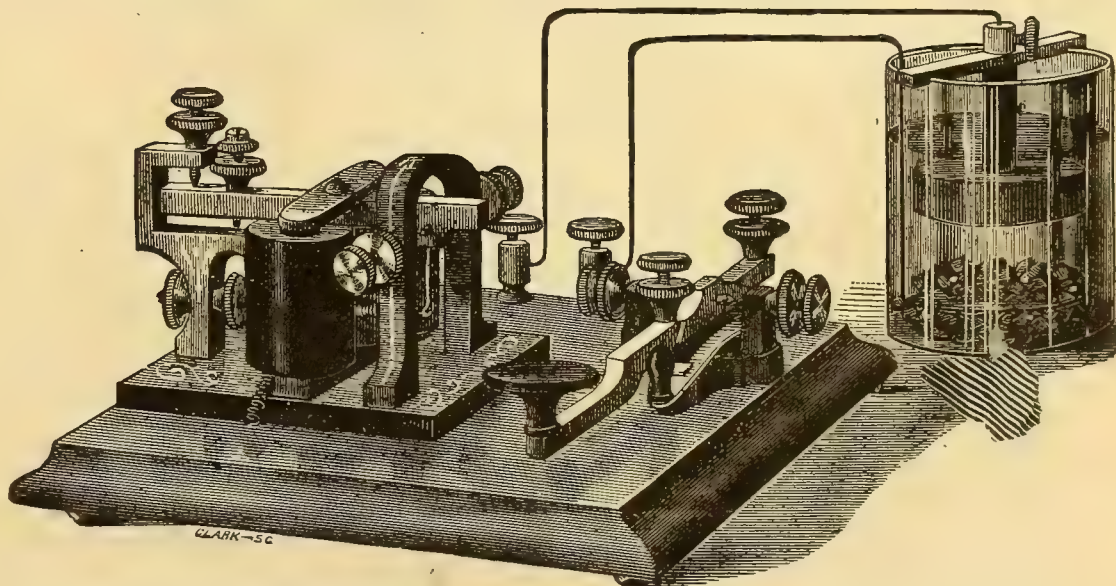
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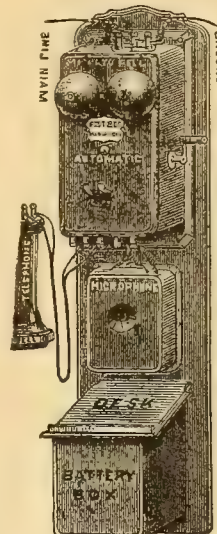
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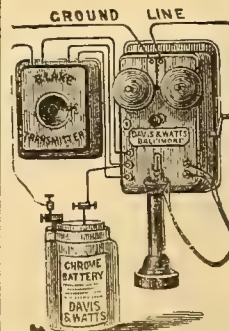
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Correspond with us before going elsewhere. Samples sent on application to authorized persons.

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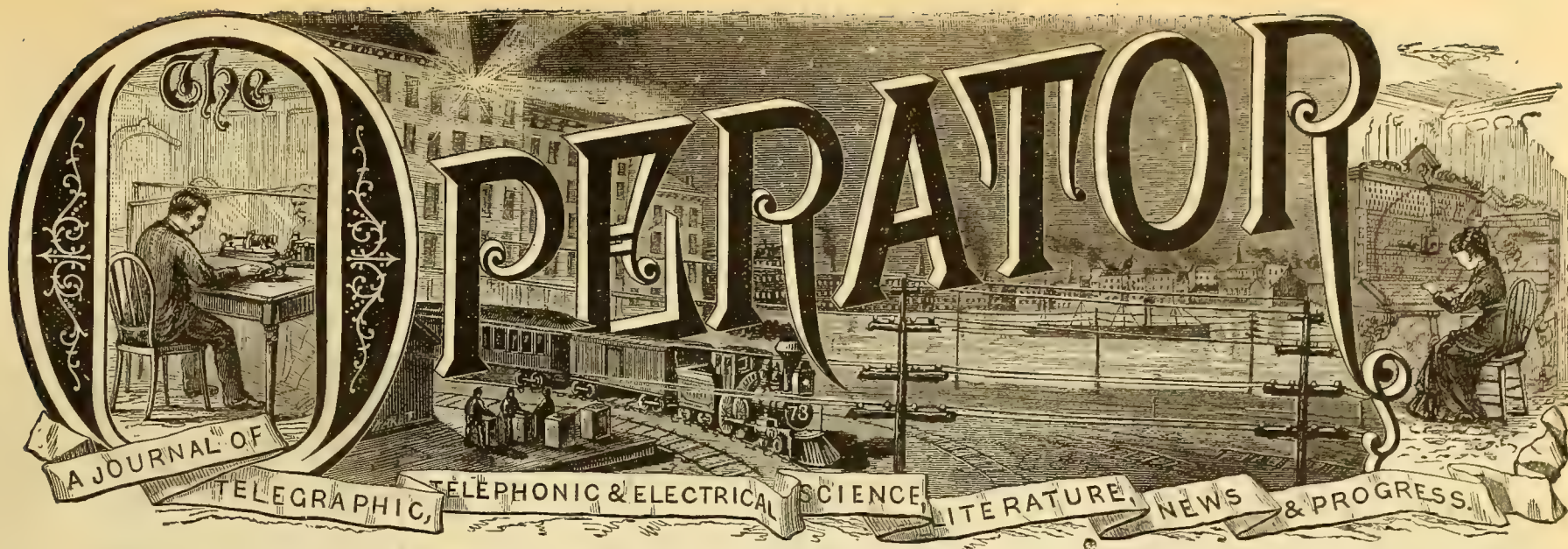
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## DO YOU WANT TO BECOME A TELEGRAPH OPERATOR?

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VOL. XII.—No. 9.

NEW YORK, MAY 1, 1881.

{ ONE DOLLAR A YEAR.  
5 CENTS PER COPY.

### THE LINEMAN.

A merry life the lineman leads,  
Although a restless soul ;  
Untrammelled by the ties of place,  
He roves from pole to pole.

Serene, aloft, in every storm,  
Though never known to boast,  
He twines his leg around an arm,  
And sticks right to his post.

The common ills that vex mankind,  
Of whatsoever shape,  
Afflict him not ; for him, at least,  
There's always some escape.

In vain may grim and grizzly Want  
Her bony finger point ;  
Though famine reign on every hand,  
He still can find a joint.

And when his crosses multiply,  
As they will do in time ;  
He simply packs his pliers up,  
And seeks some other climb.

At last he meets some gentle maid,  
Exceptionally nice ;  
Then, scorning pompous phrase, he says,  
"Come, let us make a splice."

Resolved his vises to discard  
And no more faults to find ;  
To cultivate, in homely joys,  
A calm, contented mind.

So glide his days, on pleasant lines,  
All toil and trial past,  
Through mellow years, until he finds  
The perfect ground, at last.

### Our National Portrait Gallery.

V.

JOHN CALVIN SHERER.

The worthy subject of our sketch to-day, Mr. John C. Sherer, is at present in the service of the Western Union Telegraph Company at Los Angeles, Cal. He is a fitting representative of the professional merit and intellectuality of the Pacific Slope ; and, in a general way, represents a numerous class of excellent American telegraphers who are little heard of, and whose rule of life evinces a greater determination to attain practical results than to court distinction as "leading" men—those quiet workers, of whom the world hears so little, but to whom it is so largely indebted.

Mr. Sherer was born in Cecil County, Maryland, May 6, 1852. A limited attendance at the common schools, supplemented by the most careful home instruction, and completed by a year's attendance at the Millersville (Pa.) Normal School, and a short term at a college in Poughkeepsie, N. Y., gave him a good education.

In 1869 he was initiated into the mysteries of

dots and dashes, and 1871 found him employed by the Philadelphia Local Telegraph Company, a preparatory school from which have graduated into the Western Union some of the finest and most successful operators in the country. Here

matter of the proper working of long circuits. Yreka office is a busy and very important repeating station between 'Frisco and Portland, Oregon, and has sheltered some of the most famous operators in the business ; while to have worked



J. C. SHERER, OF LOS ANGELES, CAL.

he remained for four years, gaining the complete confidence of his employers, and laying the firmest foundation for success. Operator-like, he must needs travel, and in May, 1875, he started overland for California. He was employed in San Francisco by the Pacific & Atlantic Company, and later by the Western Union, at their old main office on California street, and in August of the same year was transferred to Yreka, Northern California. This, too, is a fine school for operators in the

satisfactorily in Yreka office is of itself a certificate of efficiency.

The glories of the Centennial Exhibition brought Mr. Sherer back East, and he was soon found in the Western Union office at the Transcontinental Hotel, near the Main Building, in Fairmount Park. Upon the close of the Exhibition he became night manager of the Western Union Third street office in Philadelphia, but soon afterward returned to California by steamer, via Aspinwall and Panama. In No-



vember, 1878, the Western Union transferred him from their San Francisco main office to Los Angeles. Being still unmarried and very pleasing in manner, it is needless to say that he has become an object of great attention in the beautiful "City of the Angels."

As an operator, Mr. Sherer ranks "first-class," although, while admitting his qualifications as an electrician of more than ordinary merit, he disclaims the right to be ranked with our "fastest" operators. He believes that operators—even when rated in a lower standard—who can always be depended upon to do their work conscientiously and reasonably well, and whose habits are characterized by temperance, honesty and general morality, are of more value to, and more valued by, their employers than many more brilliant workmen who, with unapproachably "fast" records as manipulators and bizarre artistic proficiency, are yet lacking in many of the better elements of manhood.

Like many other telegraphers, Mr. Sherer is intimately connected with the press, and takes an active and creditable interest in literary matters. While in Philadelphia he was an occasional contributor to the *Sunday Transcript*, of that city, and the *Danbury News*. During the late Presidential contest he was a regular contributor to the campaign literature of Los Angeles, and although he can hardly claim that his efforts secured the election of General Garfield, he seems fully satisfied that his heavy leaders were, at least, not without *weight*. He is now the "Special Correspondent" of the Philadelphia *Bulletin*, and a regular contributor to THE OPERATOR. Altogether, his literary work—of which there is a fair specimen in the touching poem "The Christmas Tree," published in that popular work, "Christmas Evergreens"—is probably better known to the general public than to operators in particular.

Mr. Sherer works always in a modest way, but displays an active interest in any means calculated to advance or maintain the interests of the fraternity, and takes an evident pride in his profession, in which he always seems content to consider himself an humble worker. In this respect he is a model operator, and his methods are well worthy of emulation. Faithful and patient, earnest and true, always on hand when wanted, with his naturally keen perceptions sharpened and brightened by extensive travel, his painstaking assiduity and sterling qualities deserve the fullest recognition.

#### The Chicago Police Telephone and Patrol System.

Through the courtesy of Mr. J. P. Barrett, Superintendent of the Chicago Fire and Police Telegraph, the delegates of the National Telephone Exchange Association, immediately after the adjournment of the convention, examined into the workings of the above novel and valuable system. Its success in Chicago has been very marked, the arrests since its adoption being nearly doubled, while a great decrease is shown in the number of crimes reported.

The system, which may easily be understood by reference to the illustrations given, consists of telephone stations, located along the beat of the patrolmen, and connected by wire to the central police station. At these telephone stations the instrument is placed either in a sentry box (fig. 1), of which there are 91 already established, or in private residences or stores. The district box used is the Field & Firman eleven-call box, made by the Western Electric

Manufacturing Company. The telephones are the Edison carbon transmitter and the Bell telephone receiver. Keys to the sentry boxes are put into the hands of all policemen and of responsible citizens living near the boxes. The sentry box doors are secured by patent trap locks that retain the key, and as none but police officers are in possession of release keys, the person opening the box must await the arrival of an officer or lose his key. The keys are numbered, and the names of their holders recorded, so that the sender of a false alarm may be detected.

Inside of the house or sentry-box described, there is a box about the size of a fire-alarm box (see figs. 2 and 3), and through an opening in the end of this box projects a lever; inside of the

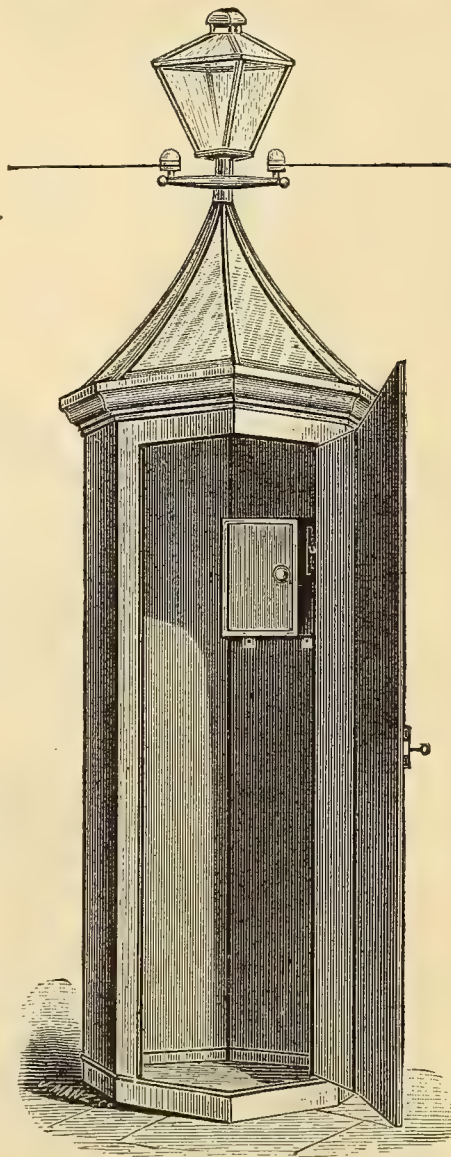


FIG. 1.—SENTRY-BOX, WITH DOOR OPEN.

box is a telephone and the usual mechanical contrivance for transmitting the arbitrary call. None but officers are in possession of keys for the inside boxes. All the inside boxes are connected with the station in the same manner as the fire alarm, and the signal is registered on the same kind of a register as that in use in all electric fire alarm systems. A person wanting the services of a policeman opens the outside door, and without opening the inside box, pulls down the lever at the side of the box; the signal is immediately registered in the station, where there is a detail of three men, with a horse and wagon, who are furnished with all facilities for quick hitching, and who immediately respond to all calls. The officer on post is required to report by telephone once an hour at night and once every half hour during the day time. He can also receive information of crime committed in any other part of the city, and is required to report all that comes to his notice of any importance at any time during the day or night, without leaving

his post. In cases of emergency he can use the arbitrary call, which will bring the patrol wagon to any box, or he can use the telephone and have assistance at any place that he may designate. When the system is complete there will be an alarm bell on the station, and in case of murder, burglary, larceny, or any crime of which the entire force should be notified immediately, a signal will be struck. On hearing this every

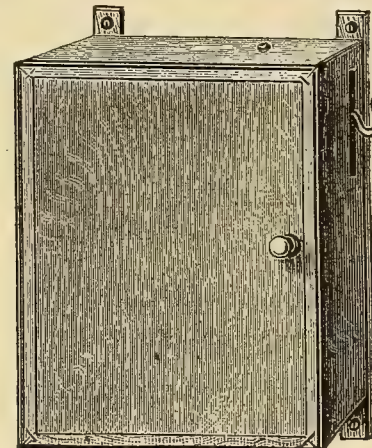


FIG. 2.—ALARM-BOX WITH DOOR CLOSED.

officer on duty will report at the box on his post when all can be informed of what has occurred and the officer in command can order all his men to any given point without delay.

The system is capable of almost indefinite extension. The signal boxes can be placed in business houses, banks, private residences, etc., thus communicating directly with the police station. The cut given fully explains the uses of the signal box, as the full directions are given on its face. When a signal box is placed in a private residence, a key of the house is left at the police station, under seal. As will be noticed by the cut, the nature of the service required can be communicated to the police in giving the call, so that in case, for instance, of burglars, the occupants of the house can remain snugly in bed, with their heads covered up, while the policeman answering the call (breaking the seal) takes the key of the house from its place, and steps quietly in at the front door, to the surprise

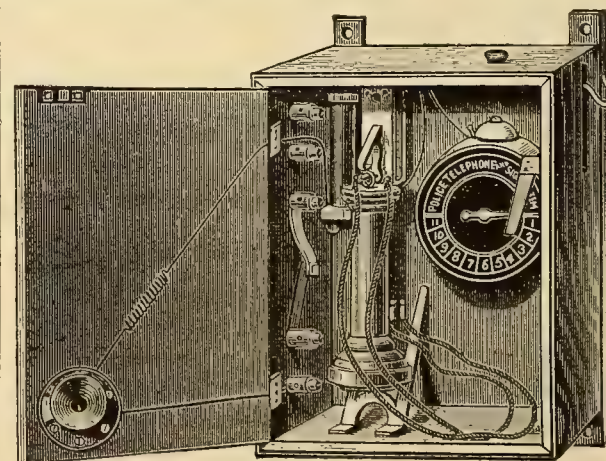


FIG. 3.—ALARM-BOX WITH DOOR OPEN.

and confusion of the enterprising burglars. Before retiring, the pointer should be placed on division No. 10, "Test of the Line," and the answering ring on the bell shows that the line is all right and in good working order. An initial charge of \$30 is made for placing the signal box in the house, after which the lines are kept in repair by the city, without further expense. This is done to encourage the introduction of signal boxes into private houses.

The patrol wagons (fig. 5) are models of convenience and adaptability for the work. They combine lightness and strength, and are conspicuous by the blue body and bright red running



gear. They are fitted with an alarm gong similar to the fire department vehicles, and as will be seen from the test below, make splendid time in answering calls. Under the seats, which run lengthwise on each side of the box, are compartments for hand-cuffs, come-alongs, clubs, blankets, canvas stretcher, ropes and other articles that are found necessary or convenient. The stretcher is ingeniously arranged, and is the most perfect device for the purpose desired that we have seen. The stretcher, when not in use, is rolled up on the poles and placed in one the compartments under the seat. When required for use the stretcher is drawn out through a small door at the end of the wagon, and four hooks, which accompany it, are fitted in their proper places, two at each side of the wagon. In these hooks the poles attached to the sides of the stretcher are placed, and the canvass hangs free between the seats of the wagon, so that the jolting of the wagon is overcome. The stretcher can be lifted from the wagon and carried without disturbing the patient. For obstreperous prisoners, there is a ring in the floor of the wagon box to which the belligerent party can be tied down and secured. The wagons were designed by Lieut. John Bonfield, who is in charge of the telephone system, and who, together with Supt. Barrett, is deserving of the credit of originating and perfecting the system.

A test call, made by Supt. Barrett for the benefit of the visiting delegates, but without any previous announcement to those who were called, brought a wagon and three officers to the sentry-box from which the call was made—two-

killed, 1; dead body taken to Morgue, 1; false alarm by citizen, 1. In addition to these were various others not mentioned. Four test runs were made, and sundry incidental duties performed, such as delivering orders, and trans-

the fire engines summoned. In a recent article on this system, the *Scientific American* calls attention to some of the above points in the following language:

"The object of the system is twofold; to increase the promptness and efficiency of police attendance in cases of emergency, and to lessen the number of patrolmen and the consequent expense of the police force. The urgent need of a public watchman or constable at any particular point in any American community is altogether exceptional, and the tendency is therefore to give the policeman a long beat to traverse. The chances are that he will be out of the way when an accident happens; and evil-doers may take advantage of his known absence to disturb the peace or invade the property rights of citizens. To provide against such exigencies by largely increasing the number of policemen is obviously much less economical than to quicken the working of the police system by putting every patrolman within the reach of instant communication with the substation to which he is attached; or if need be with the central station or police headquarters, at the same time giving every orderly citizen, in case of need, the means of calling upon the same authorities with the least delay."

We venture the prediction that at no distant date this system will be in successful use in very many of our Eastern cities and towns. Several of the delegates were so well pleased with its practical working, as explained by Superintendent Barrett, that they announced their intention of making an effort on their return to have the system introduced at once in their own cities.

The Swan incandescent lamp, essentially identical in principle with the Maxim, Edison, and

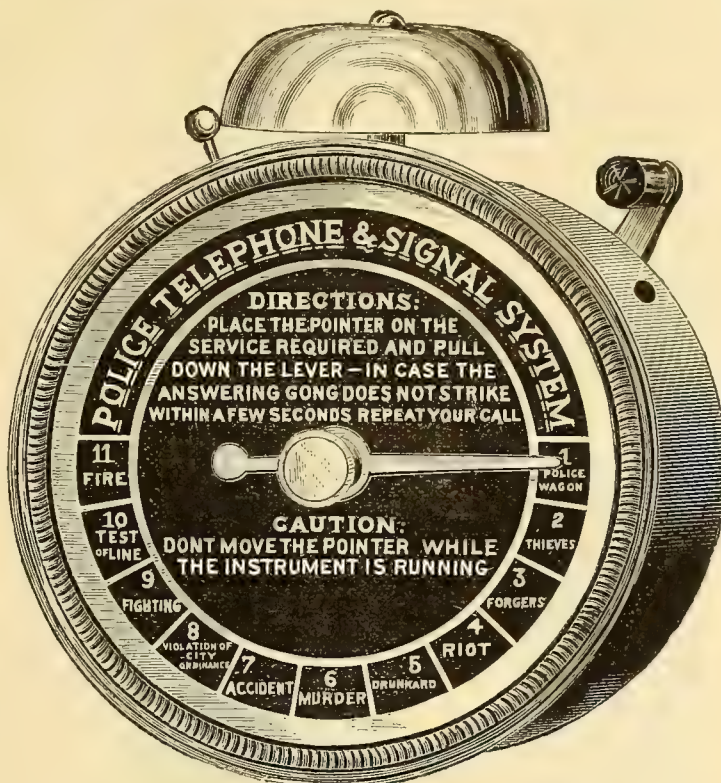


FIG. 4.—ELEVEN-CALL SIGNAL BOX.

porting police officers from place to place.

Although the new system is proved to be a necessity in large cities, yet it is in smaller cities and towns where the force is small, and the territory large, that the best results are looked for. It combines the police and the fire alarm systems, and practically multiplies the force on duty. By

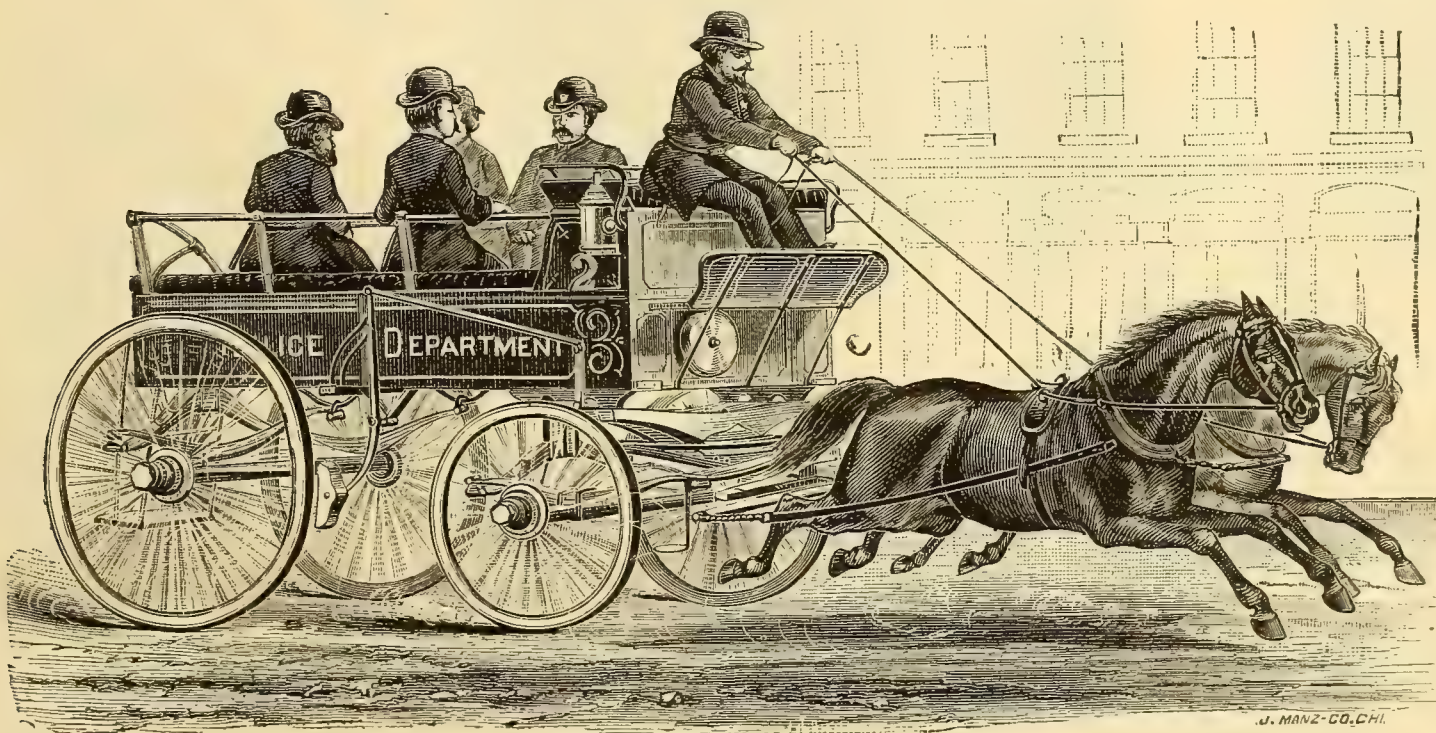


FIG. 5.—PATROL WAGON.

thirds of a mile from the police station—in two minutes and forty seconds.

The following statistics for the month of January, 1881, give an idea of the actual character of the work performed by the aid of this system: Alarms answered, 179, covering 307 miles; arrests, 88; injured persons carried home 20, to county hospital, 9; destitute and insane persons and children taken to proper asylums, 11; alarms of fire, 13; disturbances suppressed, 16; streets blocked by teams cleared, 2; wild steer

judiciously distributing the boxes over the town, the citizens can do their own policing. They can instantly summon aid from the station or headquarters, where the small number necessary to respond to the calls is all that need be retained in actual service. It is easy to figure the saving that can thus be effected, and at the same time the best possible service secured. As a fire alarm alone, the system is invaluable in smaller towns, where a building is often almost entirely consumed before a general alarm can be given and

other like electric lights in closed globes, is soon to be introduced as a "safety lamp" in some English collieries. Mr. Swan says that a light equal to 250 standard candles could be obtained by the expenditure of one horse-power at the dynamo-electric machine, and Dr. Wallace finds that one horse-power in gas gives only 100 candles of illuminating power. There is an increasing conviction that electricity will displace gas almost altogether as a means of lighting, but that the use of gas will be greater, nevertheless, as its utility for cooking, heating, and motive purposes is growing in appreciation.



### Manufacturers' Exhibits at the Telephone Convention.

Below will be found a carefully prepared report of the exhibits made by the several manufacturers at the recent telephone convention at Chicago, with especial reference to the prominent new and valuable features in each exhibit. We are compelled to defer mention of the exhibit of Messrs. C. E. Jones & Bro. until next issue, by reason of a disappointment in obtaining the necessary cuts. The cuts are being prepared, but could not be finished in time for the present number.

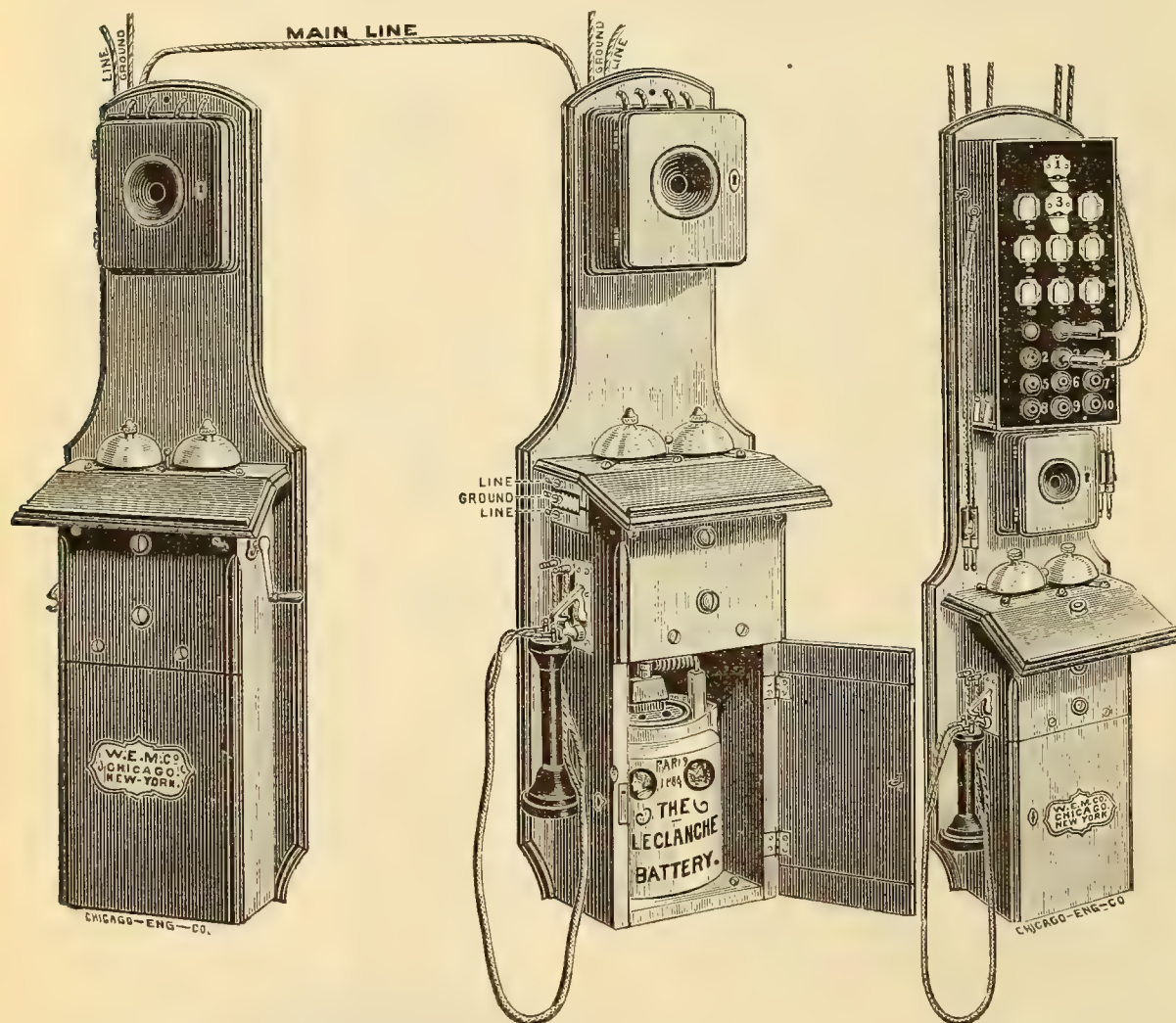
The Western Electric Manufacturing Company exhibited a large variety of telephonic apparatus and supplies, including several exchange systems, underground and overhead cables, magneté call-boxes, insulated wire, telephone cords, &c.

The exchange systems exhibited were the

central office outfit consists of a spring-jack for each subscriber, a telephone for the listening operator, and plugs and cords for connecting. There is no annunciator drop. The subscriber requires only a battery bell and switch in addition to his telephone. To call the central office, the subscriber takes his telephone off the hook and speaks directly to the listening operator over his individual wire. To connect two subscribers, the operator simply inserts two plugs connected by a cord into the spring-jacks of the two subscribers. The act of inserting the plugs puts battery to line and rings up the second party, at the same time notifying the first that the connection is completed. The conversation between two subscribers is carried on with absolute privacy, their wires being entirely disconnected from the rest of the system; but either one can at will place himself in communication with the central office and order a disconnection.

This system is a new invention, and has just been put into use at Keokuk, Iowa, where it gives excellent satisfaction. Several other ex-

The collection of insulated wire, telephone cords, line wire, etc., was very complete. A specialty of this exhibit was a very elaborate display of cables and cable materials and apparatus. There were samples of telephone and telegraph cables, containing from two to one hundred wires, for underground and aerial use, different styles of terminals and lightning arresters, wire for cables in various stages of manufacture, a model of a cable machine, samples of oil, both ordinary and specially purified, for cable use; various kinds of joints for iron and lead pipes, under-



WESTERN ELECTRIC MAGNETO CALL BOX.

CLUB SYSTEM.

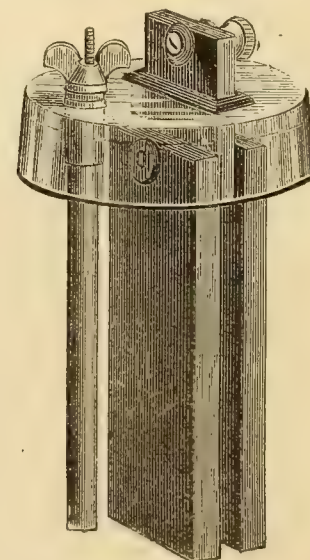


LAW BATTERY, COMPLETE.

ground test boxes and splicing boxes, maps and diagrams of cables already laid, etc.

There are now a large number of Brooks' underground cables in use throughout the country for both telephone and telegraph lines. There are no less than eight in Milwaukee and four in Chicago, mostly 50-wire cables. There are also cables at Toledo, Buffalo, St. Louis—across the bridge—Louisville, and many other places. Some of these cables have been in constant use for more than two years, and show no signs of deterioration.

A system of main battery transmission was



BATTERY WITHOUT JAR.

standard switch, the duplicate switch, and the Wiley & Scribner exchange system.

The standard switch is intended for exchanges which are not so large as to require a duplicate board, say up to four or five hundred subscribers, and is largely used in this country and abroad. It is very neat and compact, the entire apparatus for a 50-wire section occupying a space only thirteen inches wide. It is an economical board to work, as is shown by the large number of subscribers handled by a single operator. At La Fayette, Indiana, 160 lines are worked by one operator, and at other places nearly as many. The annunciator has a very simple and effective local attachment for night-bell.

By means of the duplicate switch one or two thousand subscribers can be handled in one office just as promptly and satisfactorily as one or two hundred by other systems. The operation of connecting two subscribers at the switch board consists simply in inserting two plugs. The operator is always listening, so that the calls are instantly attended to. This system is in use in Chicago for 750 subscribers in one office, and in Indianapolis for above 600 in one office.

The Wiley & Scribner exchange system requires less apparatus than any other in use. The

changes have decided to replace their present switches with this system.

The club system is a complete telephone exchange system for a small number of wires—say ten to twenty. The drops and spring-jacks are the same as are used in the standard and duplicate switch boards. This allows the utilizing of old apparatus whenever a small exchange grows so as to require a larger board.

The pole changer shown for answering calls in the central office is a very effective instrument, ingeniously designed and well constructed.

The Haskins individual bell is a complete system for individualizing any number of subscribers connected with the central office on one line.

The Warner individual bell is made for the purpose of individualizing two stations on one line.

The magneto call box now made by the Western Electric Manufacturing Company embodies all the latest improvements. It has an excellent generator and an improved bell, which rings very loudly. The automatic crank switch is a very good one, allowing the crank to be turned in either direction. There is a battery box and base board, and the telephone switch is so arranged that the circuit can never be left open.

shown, by means of which all the transmitters in a telephone exchange system are worked from one main battery at the central office, thus dispensing with local batteries at the subscribers' offices.

Telephone companies have long desired a cheap, compact, simple and durable transmitter battery, and very many forms with various combinations of elements more or less satisfactory have from time to time been tried.

The "Law" battery, cuts of which are here given, is one which seems to meet all these requirements, and to possess special advantages as a telephone battery. Although but recently put upon the market—barely two months ago—and until now not advertised, no less than two thous-



and cells have already been sold. This fact indicates its remarkable popularity and success.

Among the claims made for this battery, the following are of the utmost importance, viz :

Low cost of maintenance and renewal.

All parts of the battery exposed to view, so that any fault may be seen at a glance.

On account of the character of the cover, the water can not evaporate, or the sal ammoniac-escape.

The connections do not corrode.

The first cost of the battery is less than that of any similar battery.

Extreme simplicity.

The size of the jar is about the same as the Le-

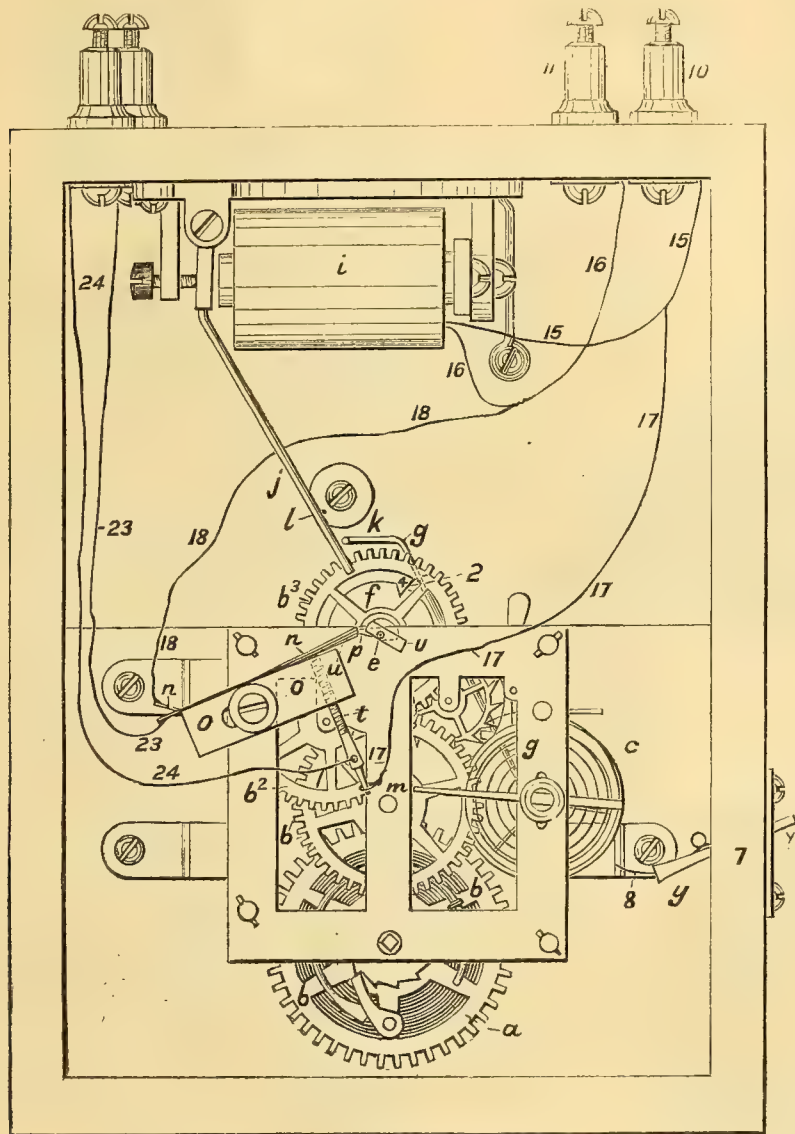
ment is needed to show the advantages of an individual signal, by which the station desired is called and the bells at all other stations left undisturbed. To accomplish these results many devices have been produced. Some of them are good, some indifferent, some very bad. Some are "marvels as mechanical and scientific curiosities, but totally unfit for the purpose intended. Some are mental visions that could not be materialized in metal."

The Bliss Individual Signal apparatus is simple in construction, rapid in action, and safe and satisfactory in results. Fig. 1 shows the box open, exposing a small train of clock-work, the necessary connection wires and an electro-

the bell at the station represented by that number is automatically thrown into the circuit and continues so until the pointer has passed that division. Thus station 2, for instance, can be rung up only while the pointer is passing division 2 of the dial-plate, and at that time no other station can be rung up.

Fig. 2 shows the box closed, ready for a call.

Fig. 3 shows the appearance of the lift and springs within the clock at station 4, in position



BLISS INDIVIDUAL BELL, SHOWING BOX OPEN.

clanché, and fits the standard size battery box. The shape of the parts may be seen in the cut.

The positive pole consists of two plates of gas retort carbon slightly separated, except at the top, to expose all possible surface. A small plate of carbon extends through the glass cover, and to this a connection screw is firmly affixed.

The negative pole is an amalgamated rod of rolled zinc, the binding post connection at the top of which is a new feature, and a good one.

By setting the glass cover in position, both poles are placed in the jar, in which has been put one half pound of sal ammoniac, and the cell filled to its shoulder with water.

The glass cover, by the aid of a thin band of soft rubber, fits tightly to the jar, making it practically air-tight. The evaporation of the liquid is thus prevented, and there being no waste of material, except when the battery is in actual use, it may be left untouched for many months without loss of power.

We commend this battery to the attention of the telephone companies as worthy, at least, of examination and trial.

The exhibit of the Telephonic Signal Corporation, of New Bedford, Mass., was the Bliss Individual Signal apparatus (patented).

To those familiar with the telephone, no argu-

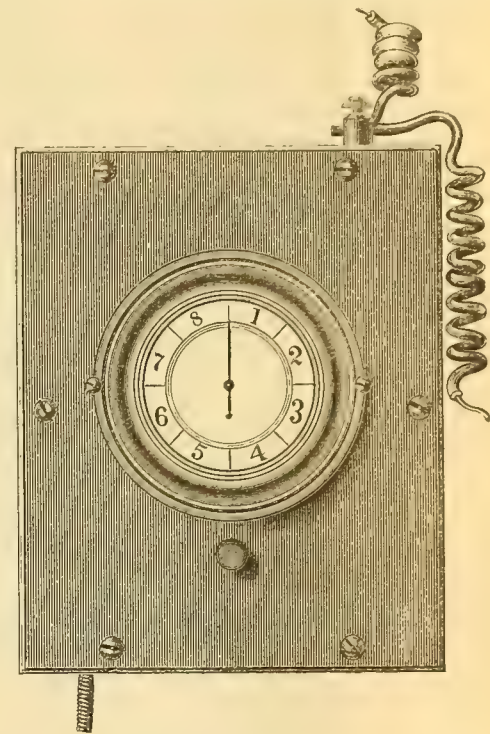
magnet, from the armature of which extends an arm to trip the catch from the balance-stop and start the clocks.

Binding posts 10 and 11 are the line posts, the two left hand posts being connected with the shunt in the clock, and the outside wires from these posts are to be connected one on each side of receiving coils of the magneto bell.

When an electric current from any station is thrown over the line, it passes through the magnet *i* at each station, which attracts the armature, causing the arm *j* to strike the lever *k*, the end of which rests against a stop on the balance-wheel shaft. The balance-wheel having been stopped in a position that strains the hair-spring, the instant the lever is removed from the balance-stop the clock at each station starts, the pointer making one revolution around the dial-plate. The lever *k* is prevented from again engaging the balance-stop for the period of one minute, during which time the one revolution of the pointer is made.

The small lever *y* with spring 8 (Fig. 1) is for the purpose of starting the clocks if from any reason the pointers have stopped out of their proper position, which is directly at the top of the dial.

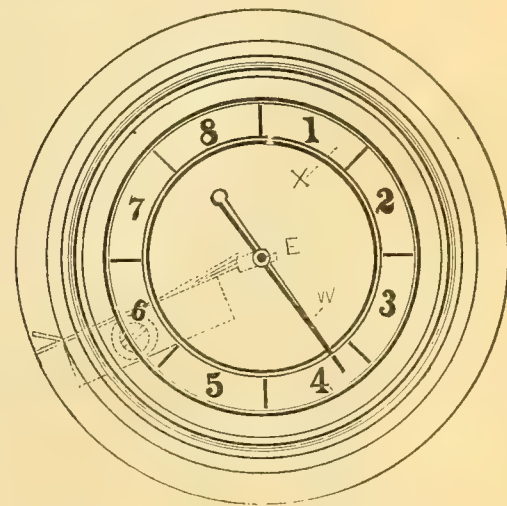
The divisions of the dial are numbered (see Fig. 2). As the pointer passes into each division



BOX CLOSED.

to ring the bell at that station—the pointer having reached division 4 of the dial.

In the recent exhibit at Chicago, nine of the Bliss clocks were shown in connection with nine magneto call bells in one circuit, and in another circuit ten, in connection with battery call bells.



IN POSITION TO RING STATION 4.

All worked perfectly, and the exhibit attracted much attention.

We are informed that the American Bell Company has recently made arrangements to own or control this invention.

An entirely novel telephone switch-board, invented by Mr. A. G. Snell, and manufactured by Messrs. C. Cowles & Co., of New Haven, Conn., attracted much attention. Mr. G. T. Perkins, Superintendent of the Springfield Telephone Co., explained the working of the new board.

The inventor has endeavored to produce a switch-board that would have neither cords nor plugs, believing that a board having all the parts fixtures in their place can be operated much more rapidly.

The device that has come to be known as the "Snell jack," consists of a lever handle having a curved arm on each side, and pivoted in a stem having a spiral spring and follower, to keep it in an upright position when disengaged from the metal spring whereby the connections



are made. By turning the lever either way, it comes in contact with the spring, making a rubbing connection so much to be desired.

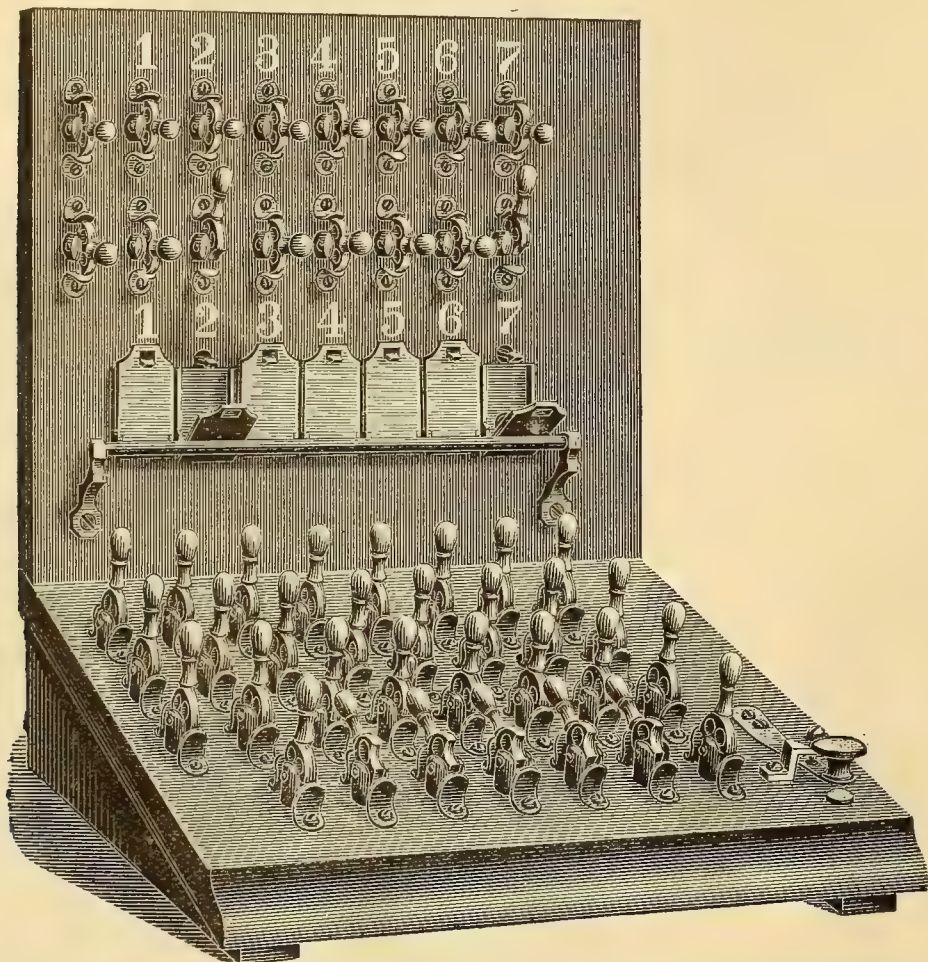
The first cut represents a switch-board made

their place by a wire passing through near the end of each, and between every third or fifth row through the end of a wire post which projects just above the surface of the board. Upon the

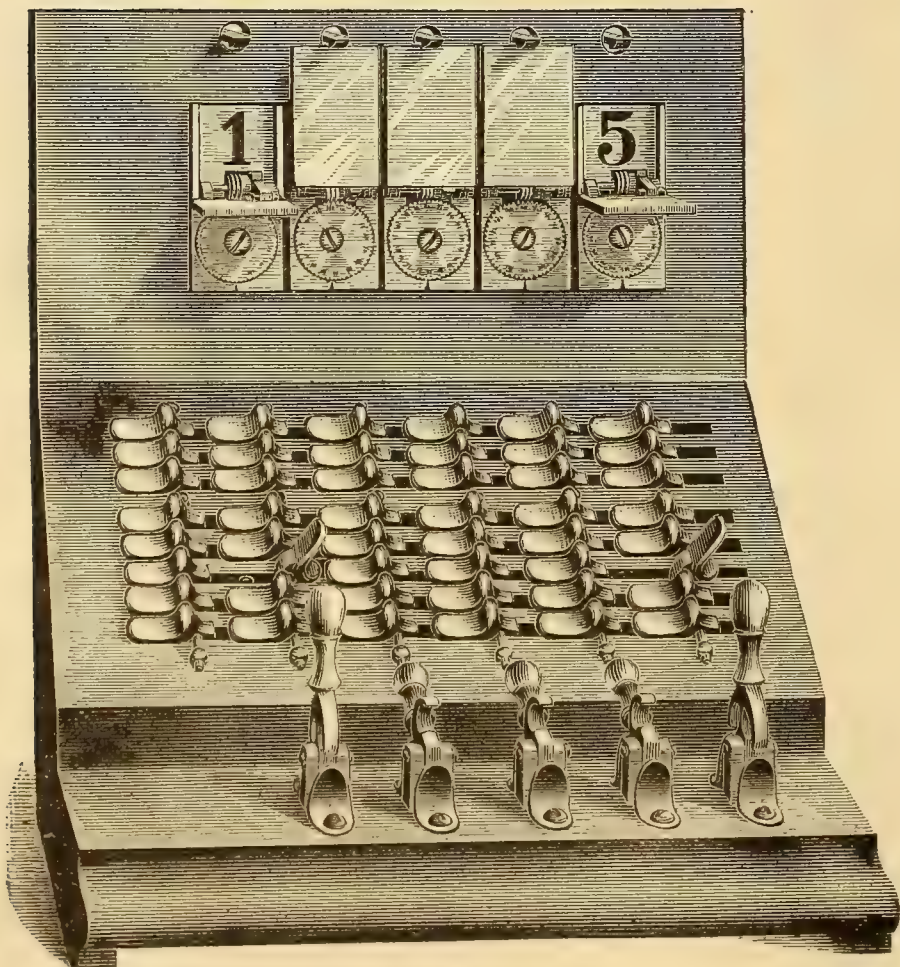
tipping up the jacks on the same groove.

The row of Snell jacks in front are for the purpose of grounding the line when at rest and switching in the operator's telephone. The cut shows 1 and 5 circuits as being in use, while all the others are at rest. When a call is received, the operator throws the proper jack from the back spring to the front by one movement, and is ready to talk with the subscriber. After receiving the request for a connection, he throws the jack into an upright position, so as not to ring on the wire on which the call was received while ringing up the party wanted.

The annunciator on the second switch has an



SNELL JACK SWITCH BOARD.

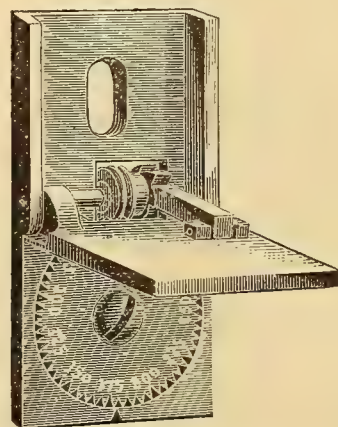


SNELL SWITCH, SHOWING CIRCUITS 1 AND 5 IN USE.

entirely of the Snell jack. The springs are connected on the back horizontally, and the levers perpendicularly. It is obvious that to connect any two circuits it is only necessary to throw the corresponding levers on the same row of springs.

The second cut represents a switch having as many rows of jacks as may be desired, held in

under side of the wire post is a spiral spring which keeps the wire drawn firmly down on the surface of the board, at the same time allowing the post to give a little in order to keep the jack firmly in its place when tipped up to make a connection on the brass plate on the bottom of the groove. Any two circuits are connected by



ANNUNCIATOR, WITH RECORDING ATTACHMENT.

attachment for recording the number of calls received on each line. It is simple and positive in its working. We show a full-sized cut which needs no explanation.

A new and valuable addition to the many telephone exchange switches was exhibited by the Utica Fire Alarm Telegraph Co. It is known as the Universal Section Switch, with Palmer's patent circular spring-jack. Objection has been made to the old style of spring-jack, that the spring became weak from use and wear, often leaving the line open at the contact points; also that small particles of dust, accidentally finding their way between the points, caused the same result.

In the Palmer spring-jack, which is mechanically a neat and handsome piece of work, these objections are removed, the spring and contact points being inclosed in a case, into which dust cannot find entrance. The contact points make a rubbing contact, and therefore clean themselves, insuring perfect electrical contact, and the spring used being a spiral spring—instead of a straight or flat spring, as before—and of the best steel wire, and so arranged that its full power is always exerted, a perfect mechanical contact is also obtained.

A considerable advantage is gained in the arrangement of the parts so as to prevent the great annoyance found in many other systems, caused by the plug dropping out by accident after connection has been made. The plug when in this jack remains, and is firmly held in place until removed by the operator.

The annunciator drop is of elegant appearance, combining lightness with strength, and has met with much favor in telephone exchanges throughout the country. The combination of these annunciators, spring-jacks and connection strips, in sections of 25, makes a complete and tasteful switch-board.

We regret that the cuts by which we intended to illustrate the prominent features of the Utica company's exhibit could not be completed in time for this issue.

The Gilliland Electric Manufacturing Company, of Indianapolis, is the largest establishment in the world making an exclusive specialty of telephonic apparatus. During the month of March, 1881, they report having paid royalty on 1,905 bells. Their exhibit included the Gilliland standard switch board, of which we give a cut, and which is in use in exchanges in Boston, Chicago, Philadelphia, St. Louis, New Orleans, Milwaukee and in many other cities, both in America and Europe. They also exhibited the Gilliland magneto bells, with and without the secrecy switch, and the new No. 2 bell, for shorter lines. For the Gilliland secrecy switch it



is claimed that it has many advantages over the old styles.

It can be attached to any of their magneto bells by a change in the connections and the addition of the indicator, for in their construction this change was provided for. In all the secrecy switches heretofore made, it was necessary to turn the switch every time it was used, but with this latest improved the gravity switch is employed.

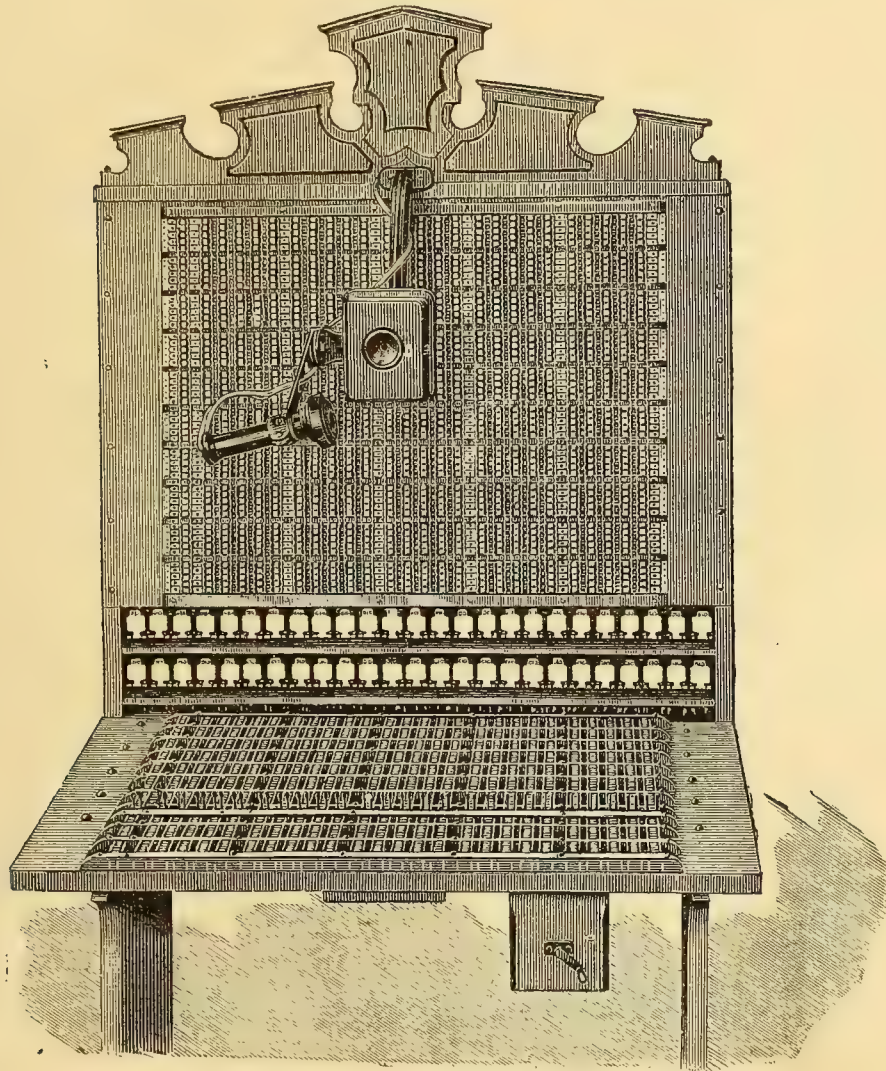
The indicator controls the talking, and when set for the exchange, no further attention is required until it is desired to talk in the opposite direction. When the telephone is hung up, the line is restored for the use of others upon the same circuit. The indicator simply governs the talking.

An improved desk battery box, the lid and front of which, working on hinges, may be opened

Anti-induction aerial cables of small size, with 50 conductors, insulated with cotton paraffine and rubber were shown, as were lead covered cables and other aerial, underground and house cables. The switch cordage and telephone cords made by this manufacturer are well known. The Sawyer patent supporter for telephone cords reduces breakage to a minimum.

A bell manufactured by Messrs. Davis & Watts, of Baltimore, attracted some attention. The feature of this bell is the use of hard brass tooth gearing, which is nearly noiseless, and is claimed to be the best means of transmitting power extant. The same firm also make a bell which works by means of an improved plan of friction gearing, for those who prefer it.

Mr. C. B. Hotchkiss exhibited A. G. Day's



THE GILLILAND STANDARD SWITCH BOARD.

and the battery exposed to view and easy of access, a new and convenient window connection, the ground clamp, the extension bell, the power generator, the pony battery—a small and cheap gravity battery—designed to be used with transmitters alone, were exhibited, and attracted attention.

This company claims originality in all the following improvements, most of which are now in general use, viz.:

The small and compact bell box.

The base board with connections run for transmitters.

The base board, desk and battery box.

The Gilliland form of generator.

The Gilliland noiseless metal gear, designed to supersede the noisy cog-wheel and rubber band.

Exterior bell adjusters.

Hinged door for easy access to apparatus.

The Gilliland improved lock and key.

Power generator, and many others of importance.

An interesting exhibit of insulated copper wire in all sizes, and with all colors and combinations of colors of braided insulation, was made by Eugene F. Phillips, of Providence, R. I.

Special claims of purity of the copper and of care in manufacture are made for this wire.

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completed, making a through connection from that city to Boston by way of New York, and western extensions on a large scale were contemplated. On May 2, \$1,500,000 bonds out of a total issue of \$5,000,000, will be offered for subscription.

#### Answers to Correspondents.

For a line about twelve miles long, with 22 offices attached, of what resistance should the main line relays and local sounders be? They are using relays and sounders both of the same resistance, 20 ohms, which I know is wrong, especially the local. If you will please instruct me through THE OPERATOR you will confer a great favor.

E. W. T.

To provide a satisfactory working circuit in wet as well as dry weather, the relays should measure about 50 ohms; sounders in local circuit to equal the resistance of the local battery and connecting wires.

In the issue of THE OPERATOR of 1st inst., in "A Simple Experiment," by I. H. Farnham, he says: "To reduce its resistance one-half." According to Ohm's law, the arrangement, as illustrated would, in the change of connections, reduce the resistance of the electro-magnet to one-fourth of the resistance in "usual form." Am I correct?

S. J. M. B.

You are. It should have been to one-fourth the resistance, and not one-half. The large number who have drawn our attention to this error shows how thoroughly THE OPERATOR is read.

#### A New Topic for some of the Employees who Got "Left."

How long will it be before a lot of competent men, working cheerfully and constantly, can build up a lively opposition, and how long will it be before those who didn't get "left" this time will be called upon to submit to another salary-grade?

Milwaukee Melange.

#### To the Editor of The Operator:

Chief Barker is again on duty, after an absence of several weeks. The Milwaukee District Telegraph Company has removed from Michigan street to 64 Wisconsin street, a much better location. Mr. W. J. Burns, quondam night-report operator (N. W.), has been succeeded by Mr. H. P. Gifford, of the Board of Trade telegraph. Mr. E. G. Toombs (W. U.) is succeeded by Mr. Ed. McRavey, well known in Milwaukee telegraphic circles. A recent addition to the northwestern day force is Mr. R. E. Looby, of St. Paul. Messrs. Arthur Allen, of Appleton, and G. W. Anderson, of this city, have been working each others' "tricks" the past week. Mr. Allen was formerly employed here on the N. W. force, among whose members he has many friends. In our last communication we neglected to mention the return of Mr. F. G. Palmer from Madison, where he had been "rushing" during the recent session of the legislature.

Mr. J. R. Calder, representing THE OPERATOR, recently paid us a visit, prior to his departure for the Southwest. His trip is yielding a fruitful harvest in this propinquity. While here Mr. Calder suggested the feasibility of a telegraphers' excursion to New York, from this part of the country. Round-trip tickets at reduced rates can easily be secured and a fine time result. Operators here generally favor the idea, and hope it will be carried to a successful issue.

OCTOPUS.

Mr. David Brooks' system of insulation has been tried successfully between Waterloo and Nine Elms Station, on the London and South Western Railway. The London *Electrician*, referring to the experiment, which was made with thirty wires in a tube, for one year, adds: "Encouraged by this success the government is about to extend the system from Nine Elms to Queen's Road Station with thirty wires in a tube, and from Queen's Road to Clapham with forty wires in a tube."

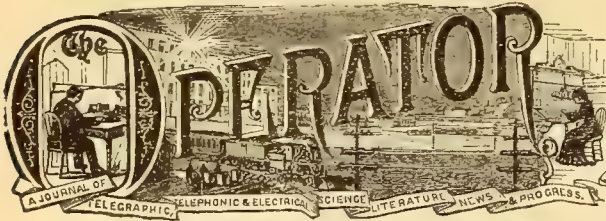
popular kerite wire and cables, including anti-induction telephone cables in which each conductor, after being insulated with kerite, is wrapped with tin-foil.

#### The Mutual Union Company.

The directors of the new Mutual Union Telegraph Company held a meeting last week, at which it was resolved to fix the capital stock of the company at \$10,000,000. The line from Boston, by way of Providence, New Haven and New York, has just been completed. Six wires have been put up, and the poles have a capacity for thirty wires. It was also decided by the Board to extend the line from Boston by way of Worcester, Springfield, Albany, Rochester, Buffalo, Cleveland, Toledo, Chicago, Milwaukee, St. Paul, Minneapolis, Kansas City, St. Louis, Indianapolis, Louisville, Cincinnati, Columbus and Pittsburgh. The points mentioned in this list, it has been estimated, control about nine-tenths of the telegraph business of the country.

The company's line to Washington has been





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W. J. JOHNSTON, Editor and Publisher.

NEW YORK, MAY 1, 1881.

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Subscribers desiring their addresses changed, should give the old as well as the new address.

## NOTICE.

MR. J. H. GREEN, manager of THE OPERATOR Branch Office at 84 and 86 La Salle street, Chicago, will keep his office open evenings from 7.30 to 8.30, in order that operators engaged during the day may call and examine our publications and become acquainted. Mr. Green devotes his entire time to THE OPERATOR and our books, and we hope the friends of the paper in Chicago and vicinity will give him all the assistance they can in his efforts to work up a large circulation in that vicinity. Subscription from the West sent to Mr. Green will receive prompt attention.

## QUALITIES NECESSARY TO SUCCESS.

It must now have become plain to even the most sanguine and confiding that there is little to hope for from telegraphic corporations beyond what we actually earn. It has heretofore been one of our greatest weaknesses to look toward our employers as, in a measure, guardians of our personal interests, and to believe that after a certain number of years had elapsed and a given number of battles had been fought and won together, they would, so to speak, "look out" for us in a paternal sort of way. It seems apparent now that this was a mistake; and, moreover, while it would be very agreeable to us, and perhaps better for both sides, morally and financially, to have such a dream realized, it is not necessary that it should be so. The consolidated company seems to be in the market to make money—a very commendable but unpoetical occupation. It seems disposed, on the principle—good again—that there is "no friendship in trade," to buy your services as cheaply as it can, or to sell itself to you, or Vanderbilt, or anybody else, body and s—but it has no soul—if a favorable price be offered. With this view of the case it behooves every man to make himself valuable—indispensable, possibly—and this can be done only by hard study and eternal vigilance. Many worthy operators have already become still worthier doctors, lawyers, dentists and commercial men, while not less than half a dozen knights of the key are millionaires to-day. There is no use in kicking against the inevitable while the time can be better spent in solid work. Every operator should not only qualify himself to do his allotted work well, but he should also qualify himself for the position next ahead; and, even if he is never called to fill it, the proficiency acquired will not hurt him. Some men say that, as there are so many in the business, it is almost useless to expect advancement. The fallacy of this kind of reasoning is best illustrated by a

marine incident. A few years ago an American ocean steamer, the Pennsylvania, during a storm in mid-ocean, had her captain (Captain Bradbury) and the three officers next below him swept off the bridge by one wave and drowned. The fourth officer—a very young man, who had doubtless reasoned that it would be twenty years at least before the company asked him to command a ship, and he had accordingly neglected his nautical education—was thus placed in command. He knew he was on the Atlantic, but his peculiar method of logarithms indicated that the ship was about Memphis, Tennessee, and so he became bewildered. Under these circumstances, the passengers organized a mild kind of mutiny, deposed the officer, offered the captaincy to the cook—who, unfortunately, was also incompetent—and the vessel was finally brought safely to port by one of the passengers. Thus, our young officer, who never expected to be suddenly called ahead, lost a splendid opportunity. This has been the secret of the success of those who have pushed themselves forward in the telegraph business. They were always ready to take hold, and when called upon to perform any delicate and onerous task, they were "there" every time. Such qualifications can only be acquired by hard study, doggedly persevered in. For any one who chooses to read the handwriting on the wall, it is now high time not to expect rewards which are not earned, or favorable consideration on account of past services; but to work cheerfully and faithfully, to keep prepared to accept something better, and, above all, to save money.

THE NEW YORK ELECTRICAL SOCIETY is already giving symptoms of remarkable vigor. Although organized less than three months ago, it has perfected arrangements for bringing before the electrical profession and scientific public of New York the world-famed experiments of Sir William Crookes, showing with great brilliancy and effect the fourth condition of matter. Until the discovery of Professor Crookes it had become settled that matter was found invariably under three conditions, namely, the solid, liquid and gaseous, but now we are made aware of another condition, acting under entirely different laws. It is denominated a radiant energy, inasmuch as wheels are revolved and bodies moved up an inclined plane in vacuums infinitely greater than any hitherto obtained by the effects of light. Prof. H. S. Carhart, from the Northwestern University of Illinois, is well known as one of the ablest experimenters in this country. He has obtained, especially for the purpose of these demonstrations, a lot of apparatus directly from Sir Wm. Crookes' manufacturers. It is highly important that all telegraphers should familiarize themselves with the subject of Professor Carhart's lecture, as the fourth state of matter underlies the marvelous photophone of Professor Bell, Sir Wm. Crookes' radiometer, and other recent important inventions and discoveries. The lecture will take place on the next regular meeting night of the society, Thursday, May 5, at 8 P. M. It will be mainly illustrated with lantern projections, mingled with dazzling effects of the Rhumkorff coil. Two thousand complimentary tickets are to be issued by the Executive Committee of the society, each member being supplied with five for the use of himself and friends. There will be no reserved seats. The main hall of Cooper Union has been secured for the occasion. The surplus of tickets is to be distributed among eminent scientists in and around New York. The society can well afford

to make its début under such favorable circumstances, even at a considerable tax upon its treasury, as the effect of the lecture will be to attract many prominent persons to the society, and the managers of Cooper Union will realize the fact that their fostering care over the infant society is not in vain. Any of our readers or others who desire to attend the lecture, but have not received tickets, or members who may wish additional tickets, can obtain the same free by applying either to the executive committee, of which Mr. F. W. Jones, electrician's department, Western Union building, is chairman, or to this office. We hope to publish a full report of the lecture, with illustrations, in next issue of THE OPERATOR.

OUR professional brethren in England have our earnest sympathy in the dignified but energetic manner in which they are pushing their claims for consideration with the Post-office Department. The department has from the first discriminated, both in the matter of salary and privileges against "telegraphists," and in favor of postal clerks—"sorters" and others. The agitation for reform has been carried on with coolness but admirable firmness, of which we, as brother telegraphers, feel proud. There has been no disposition to resort to extraordinary measures, although the course of Postmaster-General Fawcett has not been uniformly such as to encourage harmony. At a recent conference between the Postmaster-General and a delegation of telegraphists there was present on behalf of the government only one man, Mr. Fischer, from the telegraph department. The operators complain, very properly, that at that interview the gentlemen most competent to deal with matters connected with the telegraph service—namely, Messrs. Graves (Engineer-in-Chief), Preece (Electrician), and Baines (Surveyor-General of Telegraphs), who, in common with the superintendents of the large offices, have had between 20 and 30 years' telegraphic experience, were not called to give evidence. Since then the Postmaster-General has promised to "consider" the case. Our professional brethren merit success, even if only for the dignity and moderation with which they have urged their claims, and if Mr. Fawcett's reputation for fairness and intelligence is well founded, they will meet with success. The department during the past year made a profit of £354,030—equal to a dividend of 3.36 per cent., and there is no just reason why a portion of the profit should not be paid to the operators, who have always been underpaid.

WE notice in some of the large cities a disposition on the part of the consolidated companies to employ women in places involuntarily vacated by male clerks or operators. Equity and common sense demand that men shall not deny to the weaker sex the means of earning an independent livelihood; but equity and common sense also demand that these women shall be paid for similar work something like the salaries which have been paid heretofore to male employés. Equity and common sense, however, never get much of a show when economy and greed get fairly to work, so that there is already noticeable a woful disparity in the salaries paid to male and female, for similar work, which in an equitable sense is altogether unjustifiable. It is certainly a clever stroke of business to discharge some male employé, after getting, perhaps, 20 years' service out of his old bones, when you can pick up some decayed or poverty-stricken gentlewoman for half the salary. She won't do as much work, probably, nor will she work half so



well, but her salary looks nice on the pay-roll. When Hood cried, "Oh, for the rarity of Christian charity," he had no idea that the world, in its revolutions, had to go still further back—back to the ancient customs of the Huns and Goths, and that the "Do unto others" doctrine should be supplanted by the wolfish creed of "they should take who have the power, and they should keep who can." This, if persisted in, must result ultimately in a Falstaffian army of cheap telegraphers, and if they shall miss wrecking the concern it will be more by good luck than good management.

MRS. SARAH BISHOP, widow of the late Samuel C. Bishop, died at her residence, 71 Union place, this city, on Friday, March 18, after a lingering illness of over three years. Her remains were taken on the following Tuesday to Boston for interment in the burial plot in Auburn Cemetery. Upon the sudden death of her husband, which occurred on July 4, 1872, from prostration by heat, Mrs. Bishop became sole proprietor of the extensive manufactory known as the Bishop Gutta Percha Works, of 420 to 426 East Twenty-fifth street, manufacturers of gutta percha insulated telegraph cables, electrical wires, and every variety of pure gutta percha goods. Since 1872 the entire business has been under the personal supervision and management of Mr. W. W. Marks, a valued and thoroughly experienced superintendent, who became connected with the business at its inception in 1847, and whose position as superintendent and general manager, those who have dealings with the Bishop Gutta Percha Works will be glad to know, will not be affected by the death of Mrs. Bishop.

IN making our readers acquainted with each other, and with the history, habits and personality of the most worthy, through the medium of Our National Portrait Gallery, we have endeavored to proceed not only geographically, East, West and South, but at the same time to select only the best men in all directions, of whom, and the zest and worth concentrated within them, we can never know too much. The Pacific Coast has some of the most intellectual men and expert operators in the business, and we know of none more worthy than the quiet, unobtrusive young man at Los Angeles, John Calvin Sherer, whose picture we reproduce to-day. Mr. Sherer is also well known in the East, and his amiable behavior and uniformly good work have left an enduring impression here. There are more of that class of men out there—the Golden Land which boasts such telegraphers as Sabine, Rae, John Leatch, William Leahy and "Bob" Hamilton—so that we have not yet got through with California.

HERE is an historical lesson in economy which some of our managers, who through fright or mistaken zeal are trying to hire very "cheap" men, might paste in their hats for reference, and, for the matter of that, it might pay the executive officers to have an eye on them all around. In 1875, the Automatic Fire Alarm Company, in this city, reduced its operators' salaries at one fell sweep from \$75 to \$50 per month. Nearly all the competent men left at once, but one operator in particular remained as "Superintendent," at a salary \$3 less than he had previously received as an operator. The company was then on probation with regard to the public, and up to that time had done remarkably well. The "cheap" men plugged along for a while, but in

a few months the Waltham Building in Bond street, a structure rigged throughout with the company's apparatus, was burned, with a loss of two million dollars.

PROFESSOR JOSEPH HENRY died at Washington, D. C., Monday, May 13, 1878, consequently next Thursday week will be the third anniversary of his death. In him we lost one of those altruistic characters so rare nowadays—a man who devoted his days entirely to the good of his fellow man, and who, in all his long life of eighty-one years, never engaged in an enterprise which was to put a dollar in his own pocket. It was he who made the telegraph, as it is now operated, a possibility, a fact which was duly emphasized by President Garfield (then a Representative in Congress) at the Morse Memorial meeting in the House of Representatives in 1872. Congress has already commissioned Story to execute a memorial statue of Professor Henry, and it would be a fitting thing for the telegraphers to take some part in thus perpetuating the memory of one whose life was so pure, and whose work was so grand and enduring.

THE American District seems to be applying the same ruffianly tactics in this city to break down its lively opponent, the Mutual District, as were applied by others well known to break down the American Union in New Jersey. When telegraphic competition comes down to hiring gangs of desperadoes to destroy property, or to beat the employes on either side, it is high time that some of the so-called "managers" should be put to making shoes, or some other useful occupation, in the penitentiary. It is only a grade lower than throwing bombs into the open doors of the opposition shop. And yet these saintly men, who order and have ordered such rascally proceedings, are the very people who were so terribly shocked when the common operators indulged in an orderly strike without devastating other people's property.

It was the late William Orton, who, in his official capacity as President of the Western Union Telegraph Company, solemnly assured a committee of Congress that, owing to the peculiar strain placed upon the nerves of telegraph operators, six hours per day of steady telegraphing was about all that an ordinary man could stand and keep his health. If this showing be correct, there must be something radically wrong with our correspondent "Tired" and his companion—who is, doubtless, equally tired—who keep a busy office going from 7.30 A. M. until 2 A. M., and even later.

FROM European papers just to hand it appears that the gross amount received in respect of the British Post-office Telegraph service in eleven years, from 1870 to March 31, 1881, is £11,592,160 18s. 3d., and the gross amount expended is £9,920,597 9s. 7½d., which leaves, to meet interest on stock created on account of the telegraph service and the redemption of debt, a balance of £1,671,563 8s. 7½d. The capital account now amounts to £10,529,577 (about \$52,000,000).

WITH regard to that ten-pound note "endowed with speech," belonging to one of our English readers, and our remark that, when discussing the opposite side of the question, there are any number of American fifty-dollar bills equally loquacious, a number of our readers have testified that, while English ten-pound notes may be endowed with speech, American fifty-dollar bills are "endowed with wings," in all of which

they are speaking from personal knowledge.

OUR esteemed scientific contemporary of London, *The Electrician*, in its issue of the 2d ult., bore evidence of its well-merited success by appearing in enlarged form. *The Electrician* is a model journal of electrical science. It is edited in a careful and scholarly manner, and with its increased facilities for imparting valuable information should prove additionally attractive. To the practical scientist *The Electrician* should be as popular in America as it is in England.

CHICAGO has anticipated the action of other cities in this country by the new rules it has adopted in relation to overhead telegraph wires. An ordinance has been passed forbidding the erection of aerial lines, and requiring all wires now sustained above ground to be put under ground by the 1st of May, 1883. The poles will have to come down in the cities first, and eventually in the country.

PROFESSOR LOOMIS appears still to be experimenting in aerial telegraphy—telegraphing without wires—and it is now said that he proposes to establish communication, through the current which he claims is always found at a great altitude, between one of the highest peaks of the Alps, in Switzerland, and a similarly situated station on the Rocky Mountains, on this continent.

OWING to the floods in the West, and to the fact that the trip has already been longer than was intended, Mr. Calder will not at this time go further West than St. Louis. We have to thank the telegraphers in the various cities Mr. Calder visited for their generous unanimity in swelling his subscribing list, and also superintendents, managers and others in authority for their uniform courtesy and kindness to him.

On the 5th of May, 1861, the first telegraph operator fell a victim to the war. On that morning, D. Brainard Lathrop, serving with the Federal army as a telegraph operator, was entering Yorktown, Va., after its evacuation. He was injured by the explosion of a torpedo and died that afternoon.

NON-SUBSCRIBERS receiving copies of this issue will please understand that our object in sending them is, if possible, to secure their subscriptions for the paper and orders for some of the books we publish. One dollar, in an ordinary letter, properly addressed, will be reasonably certain to reach us. Larger amounts should be registered.

ON Wednesday last President Garfield designated Gen. Anson Stager as a member of the Board of Visitors at West Point. This is a deserved compliment to an old and very popular telegrapher, and reflects credit upon the Administration.

ONE virtue of the electric light, now making such rapid strides toward popularity, will be that no one can be suffocated with it in his bedroom, as is the usual idiot who blows out the gas.

WESTERN UNION stock is quoted at 116½, A. & P. at 46, and American Union at 80. On March 30 they were 113½, 47¼, and American Union not quoted.

THE present number of THE OPERATOR is probably the most elaborately illustrated issue of a telegraphic paper ever published.

THE large amount of interesting matter for this number compels us to issue a 24-page paper.



### Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

BY T. D. L.

Q. 112. What is the circuit-breaker, and why is it necessary?

A. In an induction coil, the circuit-breaker is the arrangement applied to the primary wire, which, forming part of the actual circuit, alternately completes and interrupts it. It is generally, in ordinary coils, automatic, or self-acting; for, as previously stated, the soft iron core is often made use of to work the circuit-breaker.

The construction and operation is then as follows: An iron plate, or armature, is fixed to a flat spring, opposite one of the ends of the core, and, when not in operation, it presses against a metallic back-stop, by the elasticity of the spring. The circuit of the battery and primary coil passes through this armature spring and back-stop. For example: Starting from the positive pole of the battery, the path of the current is first to the metallic limit, or back-stop; thence to the armature and spring; then to one of the primary coil terminals, through the coil, and from the other terminal to the negative pole of the battery.

Now, when the battery is connected, to put the coil in operation, the current passes through the primary coil, and causes the core to become magnetic. The armature and spring is then attracted to the core and away from its back limit. This breaks the circuit; the magnetism disappears; the armature falls back, closing the circuit, indefinitely the action, and alternately establishing and breaking the continuity of the primary circuit.

The rapidity of the vibrations is regulated by an adjusting screw. The circuit breaker is sometimes worked by a separate electro-magnet and sometimes by clockwork or other mechanical movements. In one form or another, it is an indispensable adjunct to the induction coil; because, as we have seen, the number of induced currents depend entirely upon the break and close of the primary circuit, and the consequent change of magnetism in the core. If we close the primary circuit once, we merely get one pulsation of current in the secondary coil. If we then open the primary, we again perceive but one pulsation in the secondary coil, but this time in the opposite direction. Hence, if we rapidly break and close the primary circuit, we see there is a correspondent succession of currents in the secondary coil.

Q. 113. Give a brief description of some of the largest induction coils which have been made?

A. The coil made by Ritchie, of Boston, for Mr. Gassiot, is one of the most powerful instruments constructed. The primary coil is of No. 9 wire, Birmingham gauge, and is wound in three layers, the length being one hundred and fifty feet. This coil has a gutta-percha case, over which is placed a glass tube. Over this, again, is arranged the secondary coil, divided into three sections, each five inches long, and wound on glass cylinders. The total length of the secondary wire is 73,650 feet, or nearly fourteen miles, and the core consists of a bundle of soft iron wires; the bundle being eighteen inches long and about an inch and three-quarters in diameter. The contact breaker is worked by a ratchet-wheel turned by hand. This coil has, with five cells of Grove battery, given sparks twelve inches and a quarter long.

Ritchie has since constructed a coil for the Hoboken Institute of Technology, which has a primary coil made of No. 6 wire, and 195 feet long. The core is a bundle of No. 20 iron wires, and the secondary wire is more than fifty miles long, and is made of No. 36 wire. It has, using

three large bichromate cells, given sparks 21 inches in length.

The largest coil made is that of the Polytechnic Institute, London. Its primary coil weighs one hundred and forty-five pounds, and is eleven thousand three hundred and ten feet long, while the secondary wire is one hundred and fifty miles long, weighs six hundred and six pounds, and has a resistance of 33,560 ohms.

The core is a bundle of No. 16 iron wire, and as a whole is five feet long and four inches in diameter. The entire instrument is nine feet ten inches long and two feet in diameter. This coil has given sparks twenty-nine inches in length.

Perhaps, however, the most wonderful machine of this class is that constructed by Mr. Apps, of London, for Mr. Spottiswoode, of the Royal Society. It is capable of producing sparks forty-two inches in length. It has two primary coils, which can be readily substituted for each other. One is intended for the production of long sparks; the other for short and thick sparks.

The secondary coil consists of two hundred and eighty miles of wire. Its resistance is 110,200 ohms; and the total number of convolutions is 341,850. The first primary coil is nine hundred and ninety feet long, has a resistance of two ohms and eight-tenths; consists of thirteen hundred and forty-four turns in six layers, and weighs fifty-five pounds. It has a core consisting of a bundle of iron wires, forming together a core forty-four inches long, upward of three inches and a half thick, and weighing sixty-seven pounds.

Q. 114. What are the uses of the induction coil?

A. It is a valuable agent in chemical and physical research; has been used in mines to furnish electric light in hermetically sealed tubes, and also in the place of the frictional machine to charge leyden jars. It is extensively employed for medical purposes, and has by Siemens and Halske been applied to telegraphy. For gas lighting it has been very useful; and last, but not least, has been successfully adapted to battery telephones.

Q. 115. What proportion should the resistance of an electro-magnet bear to the resistance of the other component parts of the circuit?

A. It is one of the laws of electro-magnetism that with any given battery the greatest magnetic force is obtained when the resistance of the coils of the electro-magnet or magnets is equal to the resistance of the other portions of the circuit; that is, of the batteries and conducting wires. This law holds good practically on short and local circuits; but on long telegraphic circuits it is only applicable when they are perfectly insulated. It is therefore, usual in telegraphic practice to make the total resistance of the electro-magnets considerably less than that of the line, when in good order, so that in bad weather the best results may be obtained.

To illustrate: It is required to ring a bell over a copper wire one hundred feet long, with two cells of Leclanché battery. What should be the resistance of the bell magnet to obtain the greatest magnetic power? The Leclanché cell has an internal resistance of about one ohm; therefore two cells would have a resistance of two ohms, and in this case the conductor, on account of its shortness, may be ignored. The resistance of the bell magnet need be only two ohms, to obtain the best result. The consideration of wire comes in here. Although we have decided that the resistance of the coils should be two ohms, it is still possible to err in the size of wire employed, therefore after ascertaining by the relative resistances of the circuit and the rule already given what the resistance of the electro-magnet should be, we must take care not to use wire that is too fine, or we shall reach the required resistance before the core is sufficiently covered to give much magnetic effect, as with very fine wire it takes very few convolutions to give a resistance of two ohms. It is also essential that we do not use wire that is too coarse; as in that case to reach the proper resistance we have to wind so many layers that, with the exception of the first one or two layers, convolutions are so far away from the core as to lose their influence on it. Wire should always be chosen, therefore, for winding electro-magnets that will reach the required resistance before the last convolution attains a distance of half an inch from the core. Between half-an-inch and three-eighths from the

core is the best distance for the last layer of wire.

We will now suppose a line half a mile long, built of No. 9 iron wire, with two bell magnets in circuit, and a battery of ten cells. The battery resistance is ten ohms, the line resistance about eight ohms; total resistance of line and battery is, then, eighteen ohms. The sum of the electro-magnets should then, likewise, be eighteen ohms, or nine ohms each, to obtain the greatest magnetizing power from the given battery of ten cells.

Q. 116. In constructing an electro-magnet for a very short circuit, what kind of wire should be used, and why?

A. We have seen that the resistance of the electro-magnet coil should be equal to that of the other portions of the circuit. It is, therefore, apparent that to accomplish this in a very short circuit it is necessary to employ a comparatively short, coarse wire; short, because even a very small addition would increase the resistance of the circuit out of all proportion; thick, because the current is not greatly enfeebled by its use, while the number of convolutions it allows of are sufficient to effect a strong magnetization. In short, we use a comparatively thick wire because it is necessary to get the greatest magnetic effect without the weakening of the current consequent on the use of a thin wire, which necessarily is of high resistance.

Q. 117. How should an electro-magnet be made for a very long circuit, or a circuit of very high resistance, and why?

For a long circuit, such as that of a telegraph line, or a circuit which has a high resistance outside of the coil; for instance, in the battery; the magnet must be wound with a very fine, small wire of great length, which will allow of a great number of convolutions being wound over the core without exceeding the distance at which they cease to increase its magnetism. The reason of this is, that in a very long circuit, like a telegraph line, or in a circuit of very high resistance, the current is necessarily very weak and feeble, even though the battery be composed of a large number of cells. The coil is, therefore, made of fine wire, so that a great many convolutions can be used, each one adding its own influence to the combined magnetic effect, while its own resistance (which, considered by itself, is great) is yet so small in proportion to the entire circuit that it does not decrease the strength to any great extent.

The same rule relating to the proper proportionment of the electro-magnet to the circuit holds good in this case. For example, we have a line 200 miles long, of No. 9 wire, and a battery of eighty Callaud cells. We are to have five relays. What should be the resistance of each of those relays?

We call the line wire resistance 16 ohms per mile for 200 miles. Then the line resistance will be 320 ohms. Calling the battery resistance 8 ohms per cell, the resistance of the entire battery will be 240 ohms; giving as the total resistance of line and battery 560 ohms.

Then, following the rule already given, we must make the total resistance of the electro-magnets 560 ohms, also. This, divided by 5, for the number of magnets, gives us as the resistance of each magnet, 112 ohms. In practice, however, as has been already observed, it is well to keep the magnet resistance a little less than that of the line and battery, to allow for variation due to weather. The condensed reason, then, why we use fine wire—and a great deal of it—for circuits of high resistance is, that the high resistance of the circuit greatly enfeebles the current, and we must use fine wire to make the best of the remaining strength of the current by a greatly increased number of convolutions.

### The Haskins Telephone Exchange System.

On the invitation of Mr. C. H. Haskins, a number of delegates, after the adjournment of the Chicago Convention, visited Milwaukee to examine the system in use in the Telephone Exchange there.

The delegates were met at the Milwaukee depot by Mr. H. C. Haskins, who had provided the necessary carriages, and were at once driven to a convenient hotel, where an inviting dinner awaited them. After dinner considerable time



was devoted to examining the Telephone Exchange. A remarkable and admirable feature in this system is the almost entire absence of noise. Except for the business-like rattle of the annunciators on the operating tables when the power generator is momentarily connected, and the low whisper of the operators at the switchboard in talking to subscribers, no sound was heard. All communications between the operators are made by electric signals. Nearly 500 subscribers are connected with this Exchange, and the service is apparently entirely satisfactory to them. Several connections were timed. From the first dropping of the annunciator, when the subscriber calls, until his wants have been ascertained, connection made with the party desired, and the latter called, the time occupied varied from 12 to 25 seconds. No other exchange being in operation at Milwaukee, all the connec-

the Gilliland board. Behind the annunciator board A are the operating tables. These may be placed in another room if desired, as no conversation between the boards and tables is necessary.

The horizontal strips are numbered in pairs, 1, 1, 2, 2, etc., and wires from these strips lead to the tables; so that when two parties are connected, the circuit is through the loops to the tables, and back to the board. A two point switch,  $H$ , is upon the table, for each pair of connecting strips. The lower strip  $F'$ , of the pair, is connected by its wire with the switch  $H$ , after passing through an annunciator drop  $Q$ , while the upper strip is connected to the plate  $J$ . To the other plate,  $K$ , of the switch, is connected the wire  $L$ , from the power generator  $G$ . This wire  $L$ , however, before reaching plate  $K$ , passes through the connecting points  $M$ , of the disconnecting drop  $D$ , so that when the drop  $D$  falls it will break the wire  $L$ , at  $M$ .

The normal position of the switch  $H$  is on plate

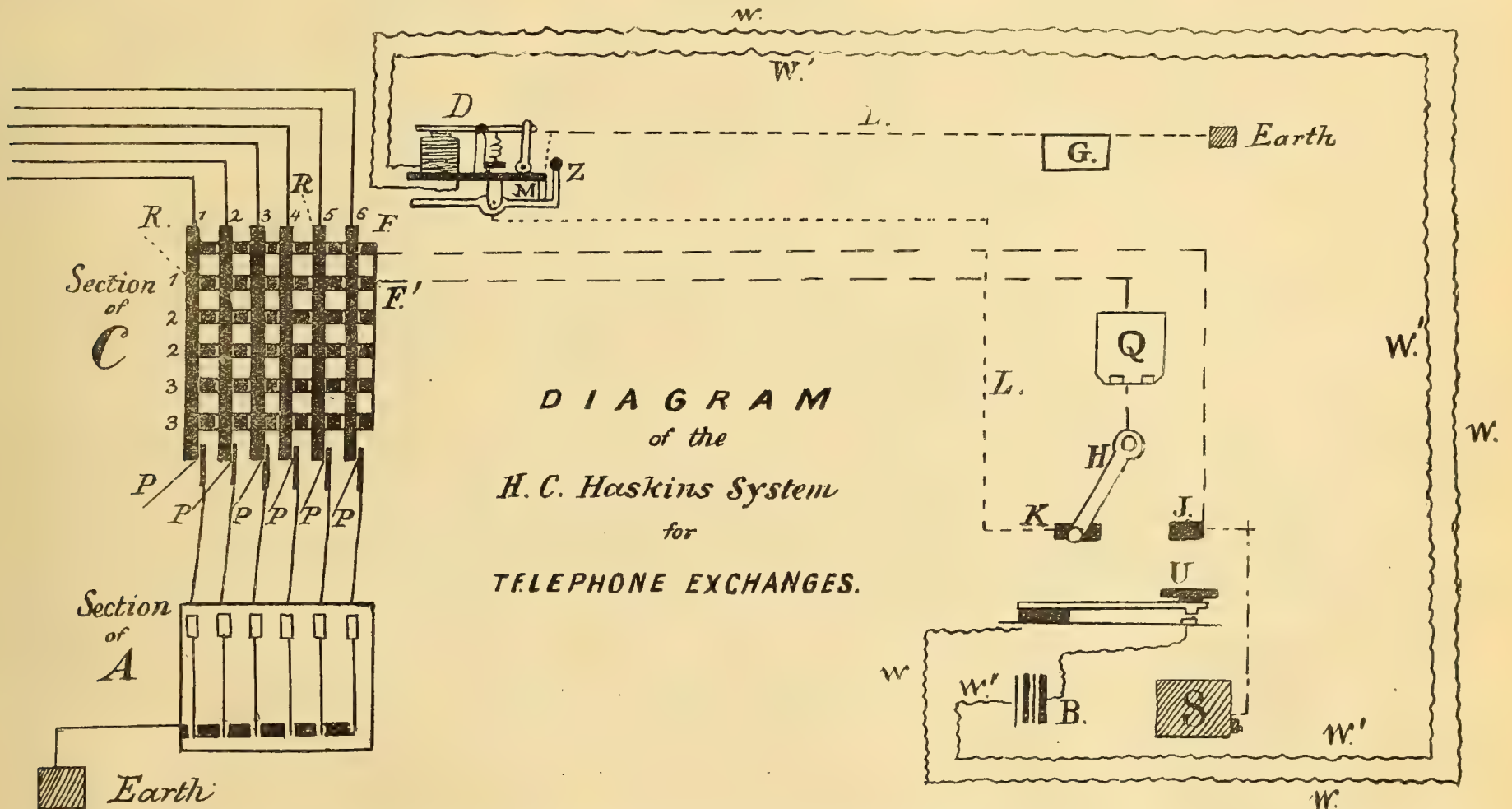
throws the disconnection drop  $D$ , and is a notice to the disconnection operator to remove the plugs from the strips numbered the same as the drop. One such drop is necessary for each pair of connecting strips.

After leaving the telephone exchange the cable boxes in which the Brooks submarine cables are connected were visited, after which the visitors returned to Chicago.

## Pacific Coast Notes.

*To the Editor of The Operator:*

SIR: Somebody sent us a copy of the *Telegram* a few days ago. We had not been warned that a new candidate for the favors of telegraph operators was to be launched upon the sea of literature, and so its appearance was the cause of a sensation of surprise that any more of the many talented men in our "profession" should



tions are, of course, local connections. About 20 per cent. of the lines have more than one station.

The system, as described below in full detail, is a very simple one, and will readily be understood and its advantages appreciated by telephone men.

Three classes of operators are required: Answering operators, to receive the first call of the subscriber, ascertain his wants and make the connection at switch C; table operators, to see that subscribers, when connected, are aware of the fact, and to notify the disconnecting operator when the subscribers have finished. The third class are the disconnection operators, whose duty it is then to remove the connection plugs, and restore the switch to its normal condition.

Two boards are used. All the lines are run to the perpendicular strips of the connecting board C, which are crossed by pairs of horizontal connection strips. The other board, A, on which the annunciators are placed, faces the connection board from five to six feet distant. The boards are of the Gilliland pattern. The course of the line wires is as follows:

From the tower or cupola to the top of the connecting board C, where they are attached to the perpendicular or line strips of the board 1, 2, 3, 4, etc., by a plug inserted below at P, between a line strip and a brass plate, each line strip is connected with a wire which runs to the annunciator board A, thence through the annunciator and by a plug connection to the ground. This is the ordinary path of the line circuit in

K. Thus the lower strip  $F'$  is connected with the generator, and if line 1 is connected by a plug inserted at  $R$ , the generator current will be thrown to that line and ring the subscriber. Hence the party desired is always put in the bottom strip, while the party calling is plugged into the upper strip at  $R'$  of any pair; and the mere insertion of the plug at the junction of a line and the bottom strip of a pair not only rings the party wanted but also drops the annunciator  $Q$  on the table, thus notifying the table operator that a connection is made.

It is evident that unless the switch  $H$  is moved from  $K$ , the generator current will continue to ring the party. Hence the table operator, as soon as the annunciator falls, moves the switch  $H$  to plate  $J$ , and restores the annunciator  $Q$ .

The answering ring of the party called passes through  $Q$ , dropping it again, and thence to the party asking the connection. Thus the answering ring notifies the table operator and the calling party at the same time.

If the first call has not been sufficient, the table operator calls again by moving the switch *H* to plate *K*. Subscribers, when they have finished their conversation, can notify the exchange by "ringing out," which will drop the annunciator *Q*, or the table operator may "listen in" by touching his telephone cord to the plate *S*, which is connected with the switch *C* at the plate *J*; and when subscribers have finished conversation this operator notifies the disconnection operator at switch *C*, by depressing the button *U*, which

rashly venture out into a channel so thickly strewn with wrecks, and upon the bosom of which but one proud bark, yclept THE OPERATOR, sails now in safety. The *Telegram* is a bright, handsome journal, filled with matter of particular and general interest, and the versatile Noble seems to have put a great deal of his best work upon the number we perused, while the other contents are certainly up to any reasonable standard that operators as a class would wish the literature of their profession gauged by. But after the failure of the venture of Messrs. Christie and Phillips, in that direction—or was *The Magnet* struck by official lightning—it really seems to us, looking at the project from a safe distance, that the temerity of this last attempt is unprecedented. At the same time we confess that we admire the courage of the Messrs. Noble, and we hope their inevitable failure won't either diminish their sublime faith (in things in general) nor shake their confidence in their fellow workers; who, for various reasons, do not concur with them in the belief that telegraphers are fairly yearning for another telegraphic paper.

We do not support THE OPERATOR because it is as able or fascinating a journal as any in the



country, nor because it is "the best and cheapest" of the numberless periodicals published in New York City and has a good-looking man for an editor; but because it is everything that we can reasonably demand and has for its editor a man who is not connected in the remotest manner with the "Great Monopoly," and, as a consequence, can and does speak independently upon all subjects connected with our welfare. And we hereby offer a gilt-edged chromo for the production, dead or alive, of any man employed by the Western Union Telegraph Company, or the Associated Press, who can, over his own signature, or in any publication known to be controlled by him, express with impunity or without fear of the consequences opinions such as have been expressed in the columns of THE OPERATOR ever since its inception! There, now! (The Editor of THE OPERATOR pays me "two bits" a line for writing this.) We have doubtless a surplus of brains in the telegraphic fraternity, but we hope that no man, nor any two men, who gives or give nine or ten hours a day to the telegraph company (for a consideration), expects or expect to be able during his or their leisure hours to edit and publish a paper which will serve the same purpose as effectually as does THE OPERATOR.

The telegraphic business of this coast continues to increase steadily in volume; that of the Southern Division, under the supervision of Superintendent Haines, one of the Argonauts of the profession, has about doubled during the past year, owing to the rapid development of the Arizona mining region during that time and now opened up to the outside world by the advent of the Southern Transcontinental Railway. Two Western Union wires (one used by the R. R. Co.) are in operation to Tucson, Arizona, 500 miles east of Los Angeles while the wire used by the Railroad Company extends as far as Deming, New Mexico, 225 miles further east, and a third line is being constructed by the Western Union eastward to Los Angeles from Tucson, now about half completed.

Tombstone, the two-year-old mining "camp," is the liveliest town in the sunburnt Territory, and the "loop" which the company extended to that place from Benson, about a year ago, is proving to be a wonderfully remunerative investment. Messrs. Kingsbury and Emlay are the operators there. Mr. Bowker has resigned his position as Manager of the Western Union offices at Tucson, and an impression prevails that he has "found something better." He is succeeded by Mr. Kearon, formerly of Sacramento, with Mr. Donnelly as a very efficient assistant. By Mr. Bowker's retirement from its service, the Western Union has lost a fine operator and one of the most "immediate" and best transmitters of Morse that it was ever the misfortune of a plug to encounter. Mr. Berry, for many years operator in the San Francisco office, has been transferred to Sacramento as chief operator, vice Mr. Frank B. Rue, resigned. The promotion is a well-deserved one and in pleasant contrast with the frequent practice of importing men to fill the best positions here. Mr. Venton, an old employé of the Company lately stationed at Maricopa, Arizona, has resigned to accept the agency of Wells-Fargo's Express Company at Pinal. His numerous friends wish him the success which he will doubtless achieve, and of which very few men can be found in the ranks who are equally deserving. He is superseded by Mr. Hall. The force at the Los Angeles office has been strengthened by the addition to it of Mr. David Allen, from Sacramento. The former office is now one of the busiest on the coast, with the volume of business passing through it increasing daily and all handled without any of the modern inventions, and with no labor-saving apparatus except a "button" repeater.

Telephone business upon the coast is fairly "booming." Bowker, at Tucson; Stewart, at Los Angeles, and Thompson, at San Diego, are all deeply interested in the "Hallo" system of communication, and the public takes kindly to it. In

Los Angeles a local Telephone Company has been incorporated, with G. Q. Stewart as the principal stockholder and manager, and Johnny Beckwith as chief switchman and manipulator of the "Hallo." Mr. Straun, formerly connected with the Bell Telephone Company in San Francisco, is now working in the capacity of telegraph operator for the Southern Pacific Railroad Co., at Tucson, having returned to his first love.

Have you seen the last number of the *Californian*? Among its contents is an interesting article by General Superintendent Gamble, upon the introduction of the telegraph upon the Pacific Coast, being a recital of his personal experiences in locating routes, constructing lines, etc., at a time when California was a trackless wilderness compared with its condition to day, and you and I and the majority of the fraternity had not yet begun to wrestle with the intricacies of the mystic art.

PACIFICUS.

April 8, 1881.

#### Chicago Notes.

To the Editor of The Operator:

SIR: The new Union Depot, Madison and Canal streets, this city, just finished, is a marvel of architectural beauty and good taste, and mammoth in appearance. It takes in the following railroads: C. & A., C., B. & Q., Panhandle, Chi., Mil. & St. Paul, and the Chicago & Northwestern. In this building is located the Union Telegraph office, accommodating the different wires of the above named roads. It is one of the finest offices in the West, and is fitted up with entirely new furniture and fixtures. The instruments, twenty in all, are of the latest and most approved pattern, and heavily nickel plated. They were made by the Western Electrical Manufacturing Company, of Chicago, and said to be a set of the most admirable sent out. The switch-board is a beauty, set in an elegantly carved and veneered black walnut case. The office is under the management of the well-known and experienced telegrapher, Mr. L. J. Mundt, with Mr. Will P. Ingram as chief operator, and D. L. Shine assistant. Two more operators are shortly to be added to the force. The C. & N. W. Railway have just moved their train dispatcher's office into their new building, a splendid structure, handsomely fitted up, a real ornament to our city. The train dispatcher's office is being furnished with new instruments, and is presided over by Mr. Otto Miller, one of the "old-timers" of the West, and an excellent dispatcher.

Western Union notes: Business booming. Arrivals: O. M. Stone, late manager A. & P., at the board; Mr. Lathrop, A. U., from South Water street, and Mr. Edward Foote, A. & P. Resigned: J. Dyer and C. Coarser, gone to St. Paul; John O'Brien with W. T. Barker, broker, (city private wire); F. Randolph with A. O. Slaughter, broker, in same capacity.

Many old operators think that Col. Wilson, late Superintendent should not have been allowed to take his departure without a suitable testimonial in recognition of his proverbial friendliness and good will to them. Their best wishes follow him.

There is a rumor current that the new officials here contemplate adding an hour to the time constituting a "day's work" on the night force, which, of course, would be equivalent to a reduction of salary and cause the hours of the night toilers to drag more wearily than ever. We earnestly hope that the rumor will not turn out to be true. There are various reasons why such action would, in the opinion of your correspondent, be impolitic, as, in the long run, bringing little or no profit to the company. True economy of labor must necessarily be in harmony with due economy of health and of life. The pale, wan faces, the sleepless-looking eyes, and the nerveless hands of the great number of the night workers, record too plainly that the price paid for their struggles and violations against the laws of nature must be, at least, a corresponding shortening of existence, and in many cases that we can recall to mind, there have thus been hastenings away forever of friends who ought to be with us now. The imposing of fresh and painful burdens upon employes, at a time of the company's unexampled prosperity, must prove, sooner or later—to put it mildly—measures of very doubtful expediency.

The late alliances and changes have brought

trying ordeals to numerous of the faithful and unfaithful all over the land. They yet inherit a future, and the events of the present must gradually rule the destinies that are to checker that future for better or for worse. *Nous Verrons.*

CHICAGO, April 25, 1881.

Respectfully Referred to the New Management.

To the Editor of The Operator:

SIR: Kindly answer this: Do you know of any telegraphic station in the country, or in any other country, that is run by two operators—one relieving the other—that is kept open from 7.30 A. M. until 2 A. M., and even later, handling two hundred commercial messages and Associated Press dispatches, besides receiving and transmitting from 1,000 to 4,500 words of "specials," with no clerk to assist on the books, counter work, etc.? Do you think it possible for two men to do such work and keep their health? What is considered a day operator's work, and a night operator's work, in hours? TIRED.

#### TELEPHONE DEPARTMENT.

Hello, exchange, please give me Jones;  
Hello, hello—o, hello—o—o!  
Oh! there you are, these telephones  
Do bother people so.

I'll call, my dear; hello, hello—o,  
I say I'll call at nine;  
I'm so in haste, sweet one—hello,  
Hello—o—o—to call you mine.

I wait—hello—impatiently,  
Hello, hello—o—the day  
When our fond souls shall melt in one—  
Hello! what's that you say?

What crack-brained fool is't telephones?  
Why, precious, I am Dan—  
Hello—you say you're Deacon Smith?  
Good Lord! not Mary Ann?

The polite young man now takes off his hat to talk to a lady through the telephone.

Our California correspondent says that the telephone business is "fairly booming" out there.

Bob Ingersoll can't learn the telephone. He says he doesn't believe the first syllable of its vocabulary.

A local telephone company has been inaugurated at Los Angeles, Cal., with Mr. G. Q. Stewart as the manager.

Telephonic communication was recently had between Bangor, Me., and St. John's, New Brunswick, a distance of 214 miles. Every word is said to have been heard distinctly.

The Vicksburg exchange is now connected with the exchange at New Orleans. The distance is 230 miles, and conversation is said to be carried on with much distinctness.

In a paper on the causes of telephonic transmission disturbance, M. GaiFFE, inferentially, condemns the friction of wires with each other and the vibrations caused by winds, etc.

The Bell Telephone Co., of Philadelphia, are fitting up at exchange at Atlantic City, which they expect to have in successful running order before the summer rush to the seaside sets in.

The complete system of telephones in China, commencing north of the Yang Tse Kiang, will be constructed under the supervision of an American telegrapher, Mr. J. A. Betts, who built the telegraph line from Tientsin to Taku.

*L'Electricité* says that the Telephone Company in Belgium has inaugurated a very ingenious and at the same time practical system. Subscribers can, by leaving word the previous evening, be awakened at any hour in the morning by means of a powerful alarm.

The Consolidated Telephone Construction and Maintenance Company (limited) is the title of a new company, intended to harmonize the hitherto conflicting interests of the United Telephone Company and the Gower-Bell Telephone Company. The capital is to be £300,000, in £1 shares, of which the first issue is to be £200,000.—*Telegraphic Journal.*

The difficulties which have hitherto prevented the United Telephone Company, of London, from extending their exchange system over the whole metropolis, owing to the Post-office monopoly have now been removed and the Post-office has



granted a license to the company to erect telephone exchanges, they paying the Post-office an annual royalty of 10 per cent. on the subscriptions received.

Telephone matters at Milwaukee are in a prosperous condition. Superintendent Kelsey informs us that the Exchange now numbers 650 subscribers, and applications are constantly being received without solicitation on the part of the telephone managers. One of their cables at the Oneida street bridge, containing fifty wires, was broken by the spring freshets recently, but was repaired and in working order two days later. The break was occasioned by the guy wires giving way, bringing the entire strain upon the cable.

Mr. C. W. Ross, Vice-President of the Columbus Telephone Company, who at the recent telephone convention advocated the use of No. 14 steel wire for telephone lines, writes: "I notice the last *Journal of the Telegraph* says editorially that it was agreed at the telephone convention that the adoption of steel wire for all telephone lines of a mile or less was advisable, but not for lines of a greater distance. The contrary was the fact, it being universally conceded that resistance might be entirely left out of the question, excepting so far as it affected signaling. This limit would not be reached inside of ten miles."

The value of the telephone is well illustrated by a recent incident which occurred in Chicago. At present, owing to the consolidation, the company is unable to put in telephones as fast as customers want them, and many are offering a premium for the use of the instruments. A tugman who had just gone into business, finding that he could not be supplied, made an offer of \$1,000 for one, and was delighted when a party, abandoning the use of his instrument, made it over to him. He acknowledged that the absence of the telephone would cost him thousands of dollars annually; in fact, he could not get along without it.

In last issue of THE OPERATOR, mention was made of the Chinnock anti-induction telephone cables. The cables referred to were all manufactured by the Bishop Gutta Percha Works, of this city. One, a ten conductor, gutta percha insulation, each conductor wrapped with sheeted lead—the manner of putting the same on being original with Supt. Marks, of the Gutta Percha Works—and the whole constructed similar to submarine cables, was laid in the North River. Other anti-induction cables made on the air-line style, manufactured in accordance with Mr. Chinnock's idea by the Bishop Gutta Percha Works, were successfully laid over a year ago, and are working perfectly at the present time.

The idea of a telephone from one's house to the church seems to be gathering popularity. Recently the President of the Telephone Exchange of Carrollton, Ill., ran a line into the Presbyterian church, connecting it with a Blake transmitter placed at the right of the speaker in the pulpit, and on the 11th ult. the citizens at a dozen residences and business places, some of them a half mile distant, listened to the sermons by the pastor. Every word of the two discourses was heard as distinctly as though the listeners were in the church. The music was particularly clear and distinct, the voices of the different choristers being readily distinguished. In Scotland, a similar experiment has been quite successful. An invalid gentleman in Edinburgh, who is a member of a United Presbyterian congregation, but has been unable from illness to attend the services of the church with which he has been associated as an elder for twelve years, has established telephonic communication between his house and the church in question. "Sounding chambers" are placed on either side of the pulpit through which the voice of the preacher is conveyed, while by means of another chamber in the gallery the singing of the choir and congregation is transmitted. The sounds alike of preaching and worship, although traveling over three miles of wire, are, it is stated, distinctly heard, not a word being missed.

The Chicago Common Council has passed an ordinance, which, carried out, promises to give serious trouble to telegraph and telephone companies in that city. One clause of the ordinance reads as follows:

"No person shall hereafter erect, construct, or put up, any telegraph pole, telegraph line, or

wire, or electric conductor, in any street, avenue, or alley, within the corporate limits of the city of Chicago, under the penalty of \$100 for each and every offense. And each and every day any such telegraph pole, line or wire, or electric conductor shall be continued and maintained after the first conviction shall constitute a new and separate offense."

Telephone men in that city say that this would put an end to the growth of the telephone system in Chicago, and would give the present patrons of the telephone companies a monopoly which would prove disastrous to their competitors in business. Between 300 and 400 applications are on hand from parties desiring telephones, which cannot be filled until the wires can be run into the consolidated offices, as otherwise the wires would have to be twice built. No further work in the way of consolidating the offices of the companies could be done after May 1, if the ordinance remained in force, as it would be an utter impossibility to place the wires under ground at so short notice.

## DASHES HERE AND THERE.

Electric illuminations will be resumed at Niagara in May.

The number of telegrams sent in Italy in 1880 was 26,332,579, being 2,398,824 more than in 1879.

The employment of tricycles for the use of telegraph messengers in New South Wales is being instituted.

The Mexican Government now owns and operates about 11,000 miles of wire radiating from the City of Mexico.

The message read: "Can't come to-day. Just quit sawing on that bill," but was received: "Can't come to-day. Just swing onto that bill."

A Philadelphia man tried the electric-kiss experiment with a science-loving young lady. The current was so strong that even the man's wife was shocked.—*News*.

It is again proposed that the flash of the lantern in every light-house shall indicate, by long and short flashes, on the principle of the Morse alphabet, the name of the particular light-house.

A St. Louis paper explains that the words "too boozy to give information," which it had applied to the night operator at the Union depot telegraph office, should have been "too busy," &c.

In referring to the advertisement of Mr. H. L. Bonsteel, in last issue, we said Mr. Bonsteel was manager of the Newark, N. Y., office, it should have been New Haven, N. Y., as the advertisement reads.

*Punch* admonishes Postmaster-General Fawcett as follows: "Will the telegraph clerks and employés be compelled to strike? They have addressed themselves to the Postmaster-General, and said 'Don't Force it!'"

George Wallace, the telegraph operator at Newport, Arkansas, and James Goodloe, a merchant, went out to hunt, with shot-guns, on the 14th ultimo. They had fine fun, during which the telegrapher mistook Goodloe for a turkey, and shot him dead.

The day operators at the Place de la Bourse, Paris, have been replaced by women. Only experienced male "clerks" acquainted with the night duties and press service have been retained at that office. But lots of them hang around there during the day, all the same.

The telegraph authorities of New South Wales now mount their messengers on velocipedes, of the tricycle type, instead of horses or ponies. It is expected that the introduction of this system will save about \$3,000 a year to the department for forage in Sydney alone, without reckoning the cost of saddlery.

A \$20 Breech-loading Shot Gun for \$7. The Champion Imported Breech-loading Shot Gun advertised in this issue by the reliable, well-known firm of E. G. Rideout & Co., New York, is pronounced by sportsmen to be unrivaled in every detail, well worth \$20, and the biggest bargain ever offered in fire-arms. Order at once, as the offer is only good until July 15.

The American Commission to the Paris Electrical Exhibition, as now fully organized, comprises Mr. Robert R. Hitt as Acting Commissioner General, with Messrs. George Walker, George F.

Barker, Captain D. P. Heap, U. S. A.; Lieut. T. C. McLean, U. S. N.; George E. Gourand and Charles R. Goodwin as Commissioners, and Mr. Philip Walker as Secretary to the Commission.

The *Electrician* says that the Newcastle wing of the First Newcastle and Durham Engineer Volunteers underwent a practical test the other day. Among other things, thirty lines of a newspaper column, equal to 240 words, were flashed across the Tyne by means of lamp signals, and read off in thirty minutes. The lamps were the same as used in the army, and this rate is said to be above the average of the regulars.

The Assembly at Albany has passed, 66 to 34, Mr. Spinola's bill for fixing the charges for receiving and delivering telegraph messages of fifteen words or less to any point in this State at not to exceed 20 cents, all dispatches to newspapers to be at one-half this rate. Mr. Niles' bill requiring the trunk lines of telegraph below Forty-second street, in New York City, to be laid under ground, also passed the Assembly—79 to 13.

The Bankers' and Merchants' Telegraph Company has been organized under the laws of the State of New York, with a capital of \$1,000,000, all of which has been subscribed for by active business men in this city, Philadelphia, Baltimore and Boston. The company has begun the construction of a twelve-wire line between Boston and Washington. The projectors say that the line is to be devoted entirely to commercial business.

Messrs. J. H. Bunnell & Co., as a further evidence, if any were necessary, of their enterprise, as well as of their growth and prosperity, have just placed in front of their store at 112 Liberty street, this city, a handsome double-decked show-case, filled with all kinds of telegraphic, telephonic and electrical instruments and apparatus, which attracts much attention from passers-by, especially those in any way connected with the business.

The number of telegraph clerks (operators) who have resigned in Great Britain since 1872 is as follows: In England—males, 1,192; females, 636. Scotland—males, 136; females, 66. Ireland—males, 159; females, 54; total, 2,343. The report shows that about one-third of the staff left for more remunerative employment, or about one-half of those who had proved themselves to be efficient in their service. The return does not include deaths or dismissals.

When the English operators sent a delegation to the Postmaster-General last month, to protest against certain grievances, the delegates were armed with the following business-like document, signed by those whom they represented: "We, the undersigned, hereby pledge ourselves, individually and collectively and unreservedly, to support the committee in any and every action that they may deem advisable for the attainment of our just claims, and the protection of our just interests." There is something striking in that kind of talk.

The full-page advertisement of the Utica Fire Alarm Telegraph Company in this issue deserves the attention of readers of THE OPERATOR. The company does a very large business in telegraph, telephone, fire alarm and other electrical apparatus and supplies, and aims to furnish the best goods at the most reasonable prices. Their switch at the telephone convention attracted much attention. We have seen the Earthquake Learners' Instrument advertised, and can say that purchasers will find it all that is claimed for it. We shall probably be able to present a cut of it next issue.

Messrs. L. G. Tillotson & Co. have in press, to be ready May 15, the sixteenth edition of their well-known work for beginners, "Smith's Manual of Telegraphy." To the manual itself will be added a new and enlarged catalogue of over 100 pages of telegraph, telephone and general electrical supplies, including all the latest improved instruments, batteries, gutta percha cables, line, office and magnet wires, and everything else pertaining to the telegraphic or telephonic business. Messrs. Tillotson & Co. will mail a copy of the new edition of "Smith's Manual" to any address on receipt of 30c.

Under ordinances of Councils of Philadelphia, recently passed, all persons or corporations making use of the municipal police and fire-alarm telegraph poles are compelled to pay 50 cents



annually for the privilege of every attachment, and to pay a license of \$5 for every new pole erected by them, and an annual fee of \$1 on all such new poles. The American Rapid Telegraph Company has just paid into the Philadelphia treasury \$500 as a license for 100 new poles, and is expected to pay \$2,500 additional within a few days for the same purpose. It is expected that from \$10,000 to \$15,000 will be realized by that city by this form of revenue this year.

The works for the Paris exhibition of electricity will soon begin. A viaduct will be built for the English electrical railway by Siemens, which will convey visitors from the Place de la Concorde to the Palais de l'Industrie. The internal arrangements will only be made at the end of the Art Exhibition, which will take place from May to July. The illumination of the palace and its annexes will be unique, as all the systems, both French and foreign, will be employed at the same time. The motive force required will be about 800 horse-power, and more than 50 kilometres of wire will have to be laid down. As regards exhibits, the exhibition will be divided into six groups, comprising sixteen classes. The groups are as follows: I. Production of Electricity. II. Transmission of Electricity. III. Electrometry. IV. Application of Electricity. V. General Mechanics (in their application to Electrical Industries). VI. Bibliography and History.

## NEW YORK CITY ITEMS.

### Echoes from 195.

The force at 195 comprises about 315 operators, 100 of whom are ladies.

On April 19, 52,441 messages were handled in the main office, being the largest number of any day in the history of the company.

Mr. W. D. Chandler, of 195, and wife, have the sincere sympathy of their friends in the loss of their infant son, which occurred at Albany on April 16.

It is said that the habit of opium smoking is indulged in by several of the operators at 195, so much so that their languid appearance attracts general attention.

On Monday, April 25, 3,600 messages were exchanged with Chicago, exclusive of several long specials. The total business of the office on that day was close upon 60,000 messages.

The executive offices of the Met. T. & T. Co. have been moved from the W. U. building to their own building, corner Liberty and Greenwich streets. The Union Pacific Railway Company will hereafter occupy the second floor of 195.

While outside the cry of the public is for clean streets, the prayer of the poor, overworked operator is for pure air. A hundred sickly, haggard looking beings attest the absolute necessity of something being done to improve the ventilation of the overcrowded operating room.

The W. U. athletic games are set for Thursday May 19, commencing at 2.45 P. M. sharp, on the Manhattan Athletic Club's grounds, corner of Eighth avenue and Fifty-sixth street. The committee have decided to keep the entries open until May 10, when they will be finally closed.

That the effervescent lady operator referred to in this column last issue has subsided into a common-place grinder of Morse, is evident from the expression of thankful joy overspreading the countenance of our respected lady manager, and the sober serenity of the operators in her immediate vicinity.

A rumor prevailed last week that three operators were afflicted with a contagious disease and they were denied an entrance to the building. Two of them have certificates from physicians on the bulletin board, vouching for their perfect health, but the third, Mr. Norvell, is authoritatively stated to be an inmate of one of the city hospitals, suffering from the small-pox. The rumor has had the effect of making many seek vaccination.

The dynamo battery is being introduced upon nearly all the quadruplex circuits, and is warmly praised by electricians and operators, with the possible exception of one or two of the latter, who innocently neglected to "cut out" before adjusting their pole-changers. Mechanical

Engineer R. H. Morris is superintending the alterations necessary to introduce the dynamo. He is assisted—under the tables—by Prof. James Larrissey, who "bobs up serenely" after each new job.

An item in the last issue of THE OPERATOR as to the hours of duty assigned to the A. U. and A. & P. operators recently transferred to 195, might be so construed as to reflect upon the spirit which at all times animates Manager Downer—that of impartiality and fairness to all. A closer examination of the facts shows that of the 14 A. & P. operators, 4 were given day tricks; 3 asked for 5.30 to 12.30, and 7 were assigned to the 11.30 to 9 trick. Of the 15 A. U. operators, 8 were given 8 to 5.30 P. M.; 3 were assigned to the 11.30 A. M. to 9 P. M.; 2 took the regular night trick, and 2 the 1 to 8 A. M., or "all night," trick. The A. & P. operators, being the first to arrive, were necessarily used to recruit forces that needed filling up.

### Other City Items.

Mr. Samuel G. Calhoun, for many years operator at "Dx" office, 134 Pearl street, has been transferred to the managership of the W. U. office at 27 Broadway.

The Board of Aldermen last week passed, over the Mayor's veto, the resolutions of the Board, some weeks since, granting a franchise to the Edison Electric Light Company.

The annual meeting of the Atlantic & Pacific Telegraph Company stockholders was held last week. It was in the main a mere formal affair. The old board of directors was re-elected, with the exception of S. F. Barger and H. McK. Twombly, resigned.

The Board of Aldermen in this city have given permission to the United States Illuminating Company and the Brush Electric Illuminating Company to lay tubes and wires and erect poles in the streets. The companies are to pay the city one cent for each lineal foot of street-way used.

On the 19th ult. a painter went to sleep on the cross-beam of a 55-foot telegraph pole of the Fire Department in Mulberry street. A crowd gathered and woke him up. He retaliated by sprinkling them with paint from the brush. Seeing that he was drunk, and fearing that he would fall, a fellow workmen shouted, "Bill, I'll give you a drink if you'll come down." He came down to get the drink, and was not allowed to paint any more.

The trial of Prof. William E. Sawyer, of this city, for felonious assault with intent to kill, in shooting Doctor Theophilus Steele in the face, resulted on the 25th ult. in the conviction of the electric light man. Application was at once made for a new trial, but the Judge reserved his decision. Mr. Sawyer then applied to be admitted to bail, pending an appeal to a higher tribunal. Judge Barrett denied the motion as being premature, the bill of exceptions not having been filed. When that is perfected the motion will be renewed.

While a number of linemen were hoisting timbers from the sidewalk to the roof of a building in Beaver street, last week, somebody threw open an iron window shutter, which was struck by one of the timbers and knocked from its hinges. In falling to the ground, it unfortunately struck and killed a woman who was passing. A few days later, a man who had gone on the roof to shake carpets threw the carpets over the telegraph wires attached to the chimney—seven feet high. He probably thinks now that that was a foolish proceeding, for the weight of the carpets pulled down wires, fixtures, chimney and all on top of him, and necessitated his removal to Chambers street hospital.

At the regular meeting of the New York Electrical Society on Thursday evening, April 21, it was decided to bring on Professor H. S. Carhart, of the Northwestern University, to lecture before the society on Thursday evening, May 5, on the "Fourth State of Matter." To defray the expenses of the lecture a subscription list was started, which has been so generously contributed to that at the time of going to press about \$100 had been subscribed. At the same meeting, Mr. F. W. Jones read his address as president, outlining the future of the society. The latter part of the evening was devoted to the reading of a paper and experiments by Mr. H. L. Bailey, inventor of the telephone service meter.

Although not entirely new, the experiments were interesting, and elicited a vote of thanks from the meeting.

The American District Telegraph Company is charged with resorting to violent and petty methods to break down the opposition of the Mutual District Messenger Company, which claims to furnish greater satisfaction to the public in the delivery of messages. The American District messenger boys, it is said, are accustomed to lie in wait for the employés of the rival company, and to prevent them by threats and blows from answering the summons sent over the wires. Two or three boys have been seen to attack and overpower a lad, and then, by running to the office or house from which the call came, secure the carrying of the message for the American District Company. These assaults have become so frequent of late that the lads who suffer assault have been instructed to apply to the police magistrates for the punishment of their assailants.

## PERSONAL.

Mr. John Pender, M. P., is the chairman of six submarine cables and director of three.

Mr. Nat. Hucker, Manager of the Buffalo, N. Y., Western Union office, has resigned.

Mr. Paul Sheehan has returned to New York from North Sydney, and is now working at 195.

Mr. W. B. Green, Manager at Cambridge, O., was married recently to Miss Annie B. Simons of that place.

Mr. F. H. Cleveland's many friends are pleased to have him with them at North Sydney, whither he has returned from St. John, N. B.

Mr. Allen McWayne, formerly operator for the Lake Shore road, at Toledo, O., is now engaged successfully in mercantile business in Drytown, Cal.

Miss Maggie J. Nutter, for many years manager of the W. U. office at Portsmouth, N. H., has been appointed manager of the Haverhill, Mass. office.

Frank S. Burton, a lineman in the employ of the American Union Telegraph Co. at New Orleans, committed suicide in that city on Sunday evening, April 17.

Thomas Dejarnette, the telegraph operator at Ruffin's depot, Va., who killed his sister under the most distressing provocation, has been finally acquitted of the charge of murder.

Mr. H. L. Houpt, operator at the Ward House, Tyrone, Pa., who was injured by the locomotive explosion in that place recently, can now walk about without the assistance of a cane.

Any information of the whereabouts of David Dingman, an operator who, when last heard of was at Los Angeles, Cal., will be gladly received by his mother, Mrs. Hannah Dingman, Brighton, Ont., Canada.

Mr. G. C. Woodward has been transferred from the Dominion to the W. U. office, North Sydney. Mr. Ward, of Sydney, takes Mr. Woodward's place until the Dominion office closes, which, report says, is to occur May 1.

Ex-Treasurer of the United States John C. New has been elected a director of the Mutual Union Telegraph Company, and has been placed in charge of the superintendence of the construction of the company's western lines.

Frank Moody, operator at the C. I., St. L. & C. depot, seems very partial to W. station on their line. When the fact is known that W. station has a lady operator, who whispers with her fingers, then the partiality is explained.—*Lafayette Times*.

Messrs. MacQuarrie, McLearn and Wheeler have been transferred from North Sydney to the Sydney cable office, to help out the Dominion Co. with the French cable business, the break in the Cape Cod section throwing their business over the St. Pierre-Louisburg section.

The International and Great Northern Railroad, of Texas and Mexico, is providing work for many operators. Mr. D. J. Healey is the Superintendent of Telegraph, with headquarters at Palestine, Texas, and has the largest railroad telegraphic department in Texas—626 miles.

The following are the members of the United States Commission to the Paris Exhibition of



Electricity: The Assistant Secretary of State, Acting Commissioner General, George Walker, Honorary Executive Commissioner; George E. Gouraud and Charles R. Goodwin, Honorary Commissioners.

The newspapers are now telling a story of how, during one of the recent storms, A. R. Swift, Superintendent of Telegraph, got snow-bound at Atlantic, Ia., and was so pressed for food that he and some others ate everything they came across except a little yellow dog, which they chased as far as they could.

First Lieutenant A. W. Greely, Fifth Cavalry, now Acting Signal Officer, will command the expedition for establishing a station for scientific observation at Lady Franklin Bay. Two other officers and twenty-one men and a surgeon will be appointed. The expedition will leave St. Johns, N. F., in June.

Philip H. Fall, the oldest operator in Texas, has the "consolidation" down fine. He explains his leaving the Western Union service and joining the railroad branch as follows: "Their red tape and three-cent men forced me out," he says, "as it did many an old-timer who stuck to them in their days of trouble."

Mr. Michael E. Hayes, an operator in the Portland, Me., W. U. office, died at his father's residence in that city, aged 21 years. Mr. Hayes, who was much esteemed by his associates, had been in the employ of the company for about seven years, and worked his way up from a messenger boy. The floral tributes at the funeral included a very handsome pillow, on which was the word "Rest," presented by his brother operators.

INDIANAPOLIS.—Matters in this city have assumed a more comprehensive character since our last. The A. U. closed its doors on the 15th, and the A. & P. some time previously. Mr. Smith, of the A. & P., went to the Union depot as night chief there, and Mr. Bruce Duncan is now at Oxford, Ind., as agent and operator for the C., H. & I. Ry. All the American Union force, with the exception of Mr. Seabold, former manager of that office, have been transferred to "B" office. Messrs. Turkheil and Carlyle have been added to the day force, and Mr. Dunn takes the A. U. report nights.

Mr. Wm. G. Jones, recently manager of the American Union telegraph offices, has been appointed manager of the Philadelphia offices of the Western Union Telegraph Company, with headquarters at Tenth and Chestnut streets. Mr. Jones enjoys the reputation of being one of the most expert telegraph operators in the profession, with which he has been identified for the past fifteen years, and always as a favorite among his fellow-workers. He is very popular with the business public and among the employes; and this, together with his long experience, assures him success in his new position. He entered upon the discharge of his new duties this morning, succeeding Heber Robinson, resigned.—*Philadelphia Bulletin*.

PORTLAND, Me.—Mr. Howard A. Black, day report and Gold and Stock operator; Mr. John D. Williams, for several years receiving clerk, and Mr. G. Clarence Gordon, check clerk, have been notified that their services will not be required after May 1. This reduction makes the operating force three men less, and the clerical force two less than they were thirteen months ago, when there were two opposition offices open in the city. Mr. Arthur W. Boker, for many years assistant cashier, has resigned rather than attempt to perform the extra duties that would be required of him, and goes to South Windham, Me. This reduction will, in all probability, be found too great as the summer rush of business starts in, and additions will have to be made to the force. However great may be the desire of the new administration to reduce, they should be aware of the fact that an employe's working capacity is limited, and that insufficient force means neglect and delay of the public's business. Already the public themselves in this city view the case in this light, and are eager to patronize another opposition.

## MARRIED.

TEBEAU—CLAYTON.—At Atlanta, Ga., April 12, E. P. Tebeau, of the W. U. Telegraph Company, to Miss Rosa Clayton, of Columbia, S. C.

W. H. MORRISON, President.

E. T. GILLILAND, Electrician & Manager.

# Gilliland Electric Manufacturing Co.,

MANUFACTURERS OF

## TELEPHONIC APPARATUS AND SUPPLIES.

### SPECIALTIES:

#### The Standard Switch-Board and Standard Magneto Call Bell.

The Gilliland Electric Manufacturing Company is the LARGEST ESTABLISHMENT IN THE WORLD making an exclusive specialty of telephonic apparatus. The aim and policy of its officers is to secure the most skillful and intelligent workmen possible, so that the inventive power and creative genius may have a relationship and harmony which will produce the revolutionizing labor-saving effects and perfect construction.

We can confidently announce that our machinery and tools have no equal or approximation by any other establishment—being comparatively new and of the latest improved pattern (not a single piece of second-hand or old machinery in the works), to which we are adding from day to day, that our friends may reap all the advantages that skill, science and ingenuity may give us and them.

#### OF OUR STANDARD SWITCH-BOARD NEARLY 800 HAVE BEEN SOLD.

The Standard has been adopted by nearly all of the principal Exchanges of this country and the International Company for Europe.

We also manufacture Special Switch-Boards, among which are the Fay, Haskin, Vail, Durant and Sabin systems.

Of the many large cities using our Switch-Boards, we mention the following: Boston, Philadelphia, Denver, Buffalo, Toledo, Dayton, Louisville, Vicksburg, Chicago, St. Louis, Kansas City, Hot Springs, Memphis, Omaha, Salt Lake, Montreal, New Orleans, Milwaukee, and numerous large cities of Europe, with the greater majority of the smaller cities, towns and villages of this country.

#### Of the Gilliland Standard Magneto Bell 20,000 are Now in Use, Everywhere Giving Satisfaction.

Our Standard Magneto Bell, which we originally introduced, was immensely popular with the Desk and Battery Box Improvement, and when we added the "Automatic" feature, other parties adopted our styles, in order to secure a part of the avalanche of orders with which we were and are at present overwhelmed.

We also added other improvements, that are being taken up in some form, by every manufacturer in the country, viz:

- The small and compact bell box.
- The base-board with connections run for transmitters.
- The base-board, desk and battery box.
- Our present form of generator.
- Our noiseless metal gear, designed to supersede the noisy cog-wheel and rubber-band nuisance.
- Exterior bell adjusters.
- Hinged door for easy access to apparatus.
- Our improved lock and key.
- Power generator, and many others of importance.

#### We claim for our Standard Bell superiority in the following points:

- 1st. Strength of current generated. All of our bells are tested to ring through 5,000 ohms resistance.
- 2d. Durability is secured through the application of the best mechanical principles and workmanship, together with the use of materials best adapted to the purpose and of the finest quality. All contact points are platina tipped.
- 3d. Our system of interchangeability in all parts of the bell obviates any necessity for expensive repairs in case of accident, as we can furnish any part at a moment's notice, and guarantee it to fit perfectly without alteration. Each piece is made to standard gauge, and we furnish customers with a numbered diagram showing every part of both bell and switch-board.

Having largely increased our facilities, we are now enabled to assure promptness in filling orders. All goods of our manufacture are guaranteed to give entire satisfaction. We shall be pleased to furnish exchanges a sample Magneto-Bell subject to approval, and illustrated and descriptive circular of switch-board, magneto bells, etc.

We are prepared to furnish Telegraph and Electrical Supplies in any quantity at the lowest rates. Shall be pleased to make quotations or furnish any information desired, on application.

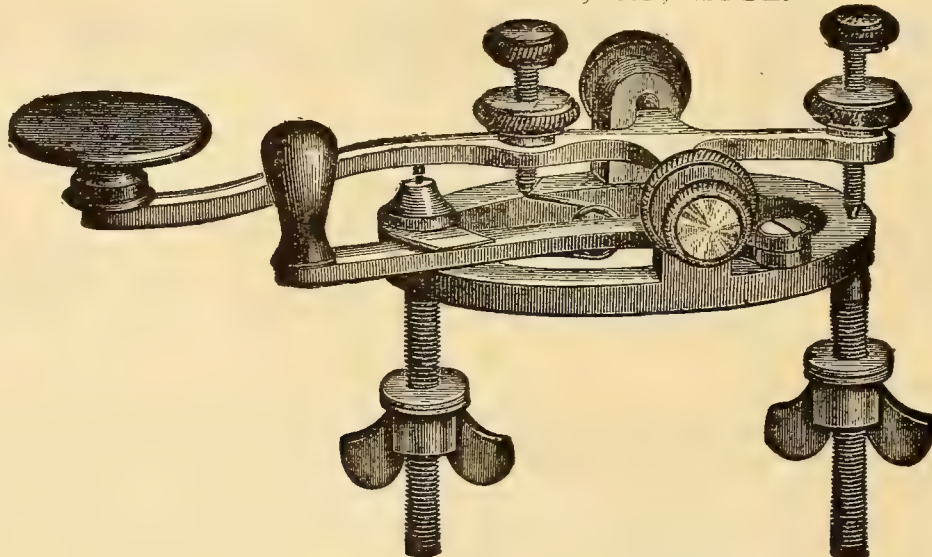
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GILLILAND ELECTRIC MANUFACTURING COMPANY,  
INDIANAPOLIS, IND.



# J. H. BUNNELL & CO.'S NEW STEEL LEVER SOLID TRUNNION KEY

PATENTED FEB. 15, 1881.



BEST IN THE WORLD.

We have much pleasure in being first to make and bring to the notice of Telegraphers and Managers of Telegraphs this new and important improvement in keys.

We offer it as being *more durable* and in every respect *better* than any other for rapid and perfect Morse sending for the following reasons:

The lever is *only one-half the weight* of the ordinary brass lever, as generally made.

The entire Lever and Trunnions together being made of *but one piece* of fine wrought steel, the common defect of loose trunnions is avoided, the strength of a heavy brass lever is obtained with much less weight of metal, and, by the perfect bearing which the solid trunnion gives, together with the use of *hardened platina points*, *sticking is absolutely prevented*.

The size and proportions are such as to make it the most perfect operating key possible to obtain, either for the hand of the skilled and rapid expert or the beginner.

PRICE, \$3.00. FINELY FINISHED, AND LEVER NICKEL-PLATED.

LIBERAL DISCOUNT ON ORDERS FOR COMPANY SUPPLY.

Steel Lever Key sent by mail post paid, to any part of the U. S. or Canada on receipt of the above price, by registered letter or money order.

## THE AMERICAN UNION TELEGRAPH CO.

New York, Dec. 18th, 1880.

J. H. BUNNELL & Co.

Gentlemen:—We have in use in this office, sixty-eight of your Steel Lever Keys.

The general verdict regarding them is, that THEY ARE THE BEST KEYS EVER PUT ON A DESK.

Yours truly,

WM. J. DEALY,

Manager Am. Union Co.'s (Main Office).

## UNION PACIFIC RAILWAY CO. (Telegraph Dep't).

Omaha, Neb., January 15th, 1881.

J. H. BUNNELL & Co.

Dear Sirs:—Your instruments meet with much favor on this company's lines and give good satisfaction. The Steel Lever Keys, especially, are much admired by the operators who generally pronounce them *the best*. They at once combine strength and neatness, and are well adapted for easy and rapid sending.

Yours truly,

L. H. KORTY,

Chief Operator.

## CONTINENTAL TELEGRAPH CO.

New York, Dec. 14th, 1880.

J. H. BUNNELL & Co.

There is nothing that I can say that will be too strong in commendation of your New Steel Lever Key. Every one of our operators, without exception, regard it with decided favor, and I am now satisfied that its general use is not only a positive help to operators' efficient labors, but a decided advantage to the general service of the Company. We are using them in preference to all others.

Yours truly,

J. G. CASE,

City Manager Continental Tel. Co.

## THE ATLANTIC AND PACIFIC TELEGRAPH CO.

New York, Dec. 16th, 1880.

J. H. BUNNELL & Co.

We have six of your Patent Steel Lever Keys in use here in the principal office of this Company. They give entire satisfaction in every way. We consider them a great improvement on the old style of telegraph key.

Yours truly,

P. P. HAUFF,

Manager Main Office, 145 Broadway, N. Y.

## BALTIMORE AND OHIO RAILROAD CO. (Tel. Dep't),

Baltimore, Dec. 28th, 1880.

J. H. BUNNELL & Co.

Gentlemen:—I take pleasure in forwarding to you the accompanying testimonial, voluntarily contributed by the operators in Camden Station Office, to the superior merits of your New Steel Lever Key.

Very truly yours,

CHAS. A. TINKER, Supt.

## BALTIMORE AND OHIO RAILROAD COMPANY.

(Telegraph Department.)

December 27, 1880.

We, the undersigned operators at Camden Station, B. and O. R. R., Baltimore, having fully tested your "New Steel Lever Key," concur in saying, it is the *best*, without any exception, we have ever used.

Respectfully,

CHAS. P. ADAMS,

GEO. R. BUNTING, JR.

E. J. LITTLE,

W. E. KING,

J. W. FERRY,

B. F. HARD,

A. D. FEASEL,

GEORGE BOGGS,

W. W. MOORE,

WM. A. LENZ,

J. F. McLAUGHLIN,

J. W. STAYLOR,

H. P. BILSON.

And I endorse the above, O. W. CLARVOE, Div. Operator.

From the winner of first prize in the fast sending tournament, New York, August 22, 1880, 500 words in 11 min. 14½ seconds.

"Cable Station No. Sydney, C. B.," Dec. 26, 1880.

Prefer it to any other key I have ever used. It is the general opinion of the operators here that the Steel Lever Key is the best they have ever seen.

W. J. CURTIS.

"Your Steel Lever Key proves to be one of the best improvements ever introduced in Telegraphic Apparatus."

J. H. LOUNSBURY,

Manager Am. Union Telegraph, Hartford, Conn.

All our best senders who have tried it here, praise it highly and pronounce it "fast."

R. J. WYNNE,

W. U. Telegraph, Washington, D. C.

THE FOLLOWING EXPRESSIONS OF OPINION ARE ALL FROM THE WESTERN UNION MAIN OFFICE, 197 BROADWAY, NEW YORK.

We have your keys on the Chicago, St. Louis and Buffalo Quads, Western, Eastern and State Press, and C. N. D. Circuits. Without a single exception, the operators regard them as the very best.

FRED CATLIN.

Best key I ever used.

FRANK VITES.

Having worked your Key on Chicago Quad for the past month, can cheerfully say it is the best Telegraph Key I have ever used.

CHAS. F. HUTCHINSON.

Far superior to any other Key.

COURT M. CUNNINGHAM.

Requires less labor, is capable of greater speed, and sends finer and firmer Morse than any heretofore in use.

J. A. WRIGHT, JR., D. B. CASE,

RICHMOND SMITH, E. F. HOWELL.

Consider your Key far superior to any I have yet handled.

J. E. SAYRES,  
Cincinnati Quad.

Like the Key very much. It makes sending easy.

T. H. ALLEN,  
New Orleans Duplex.

Your Key is, without doubt, the best in the world. It is simply perfection.

J. B. COULTER.

Our only desire is to have one of your Keys put on the Pittsburg Quad. Elymiller works on the Pittsburg end.

DENNIS BROWN and M. DURIVAN.

Your Key is, in my opinion, unequalled.

MINOR M. DAVIS,  
Philadelphia Quad.

The finest in the world.

J. B. TALTAVALL, J. H. YOUNG,  
St. Louis Quad.

Best I have ever used.

E. H. MILLER,  
State Press.

Prefer it to any I have ever used.

CHAS. W. MINIER.

The best Telegraph Key we ever handled.

W. D. CHANDLER, } Chicago Quad.  
M. LABAUGH, }

There is but one perfect Key, and this is it.

W. C. ATKINSON,  
Baltimore Quad.

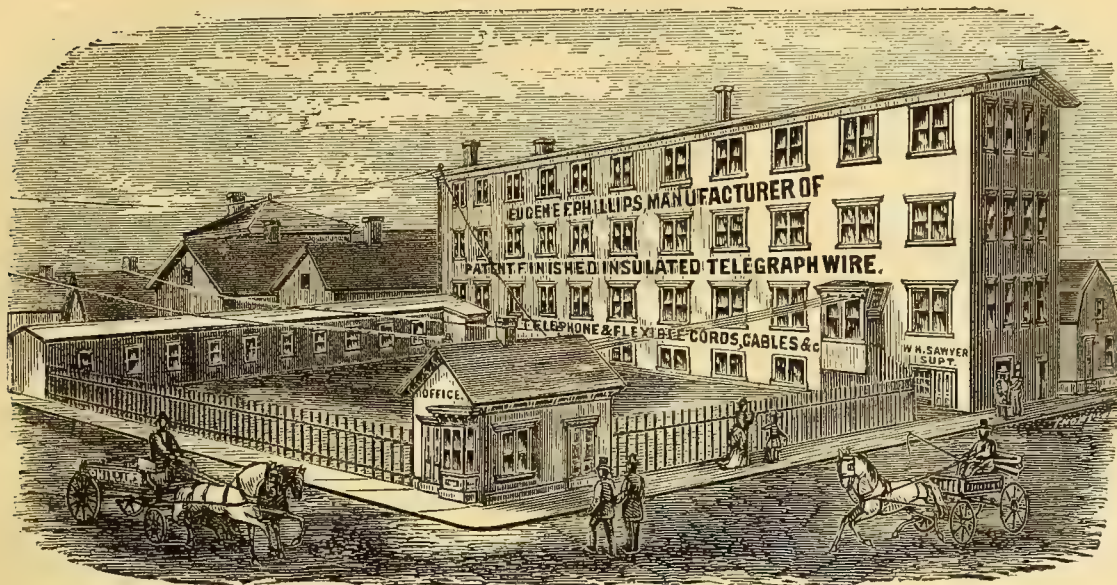
FULL LINE OF FIRST-CLASS SOUNDERS, KEYS, RELAYS, AND TELEGRAPHIC EQUIPMENTS OF EVERY DESCRIPTION.  
SEND FOR CATALOGUE FREE.

J. H. BUNNELL & CO., 112 Liberty Street, New York.



# EUGENE F. PHILLIPS,

## PROVIDENCE, R. I.



MANUFACTURER OF PATENT FINISHED

## Insulated Telegraph Wire,

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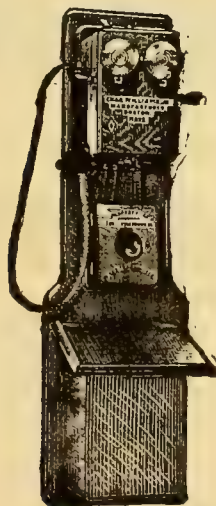
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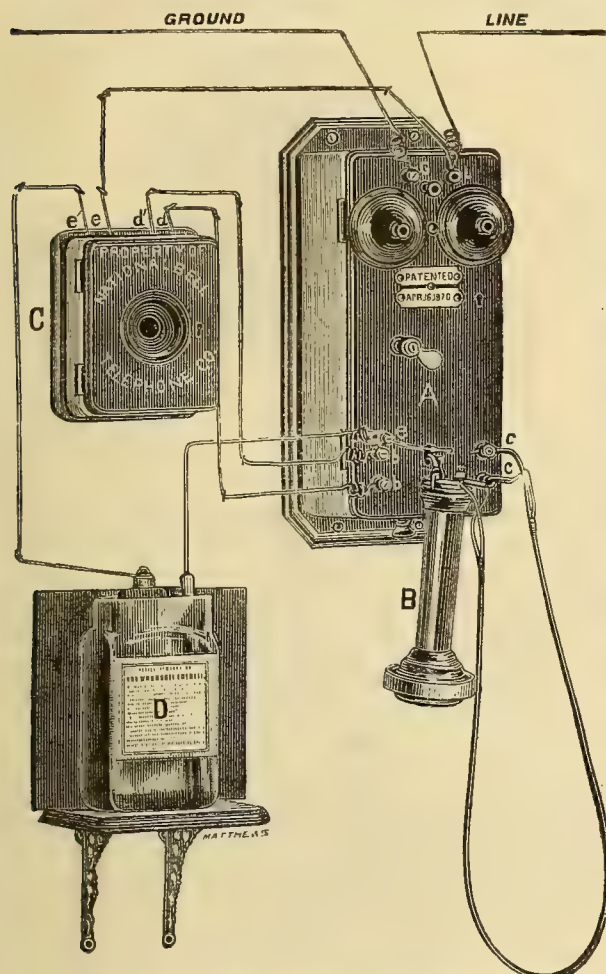


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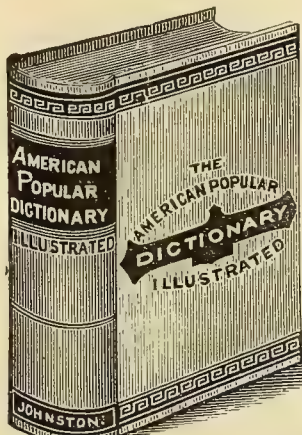
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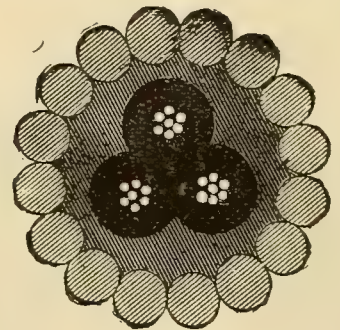
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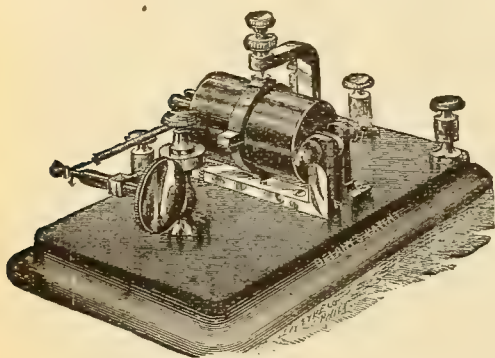
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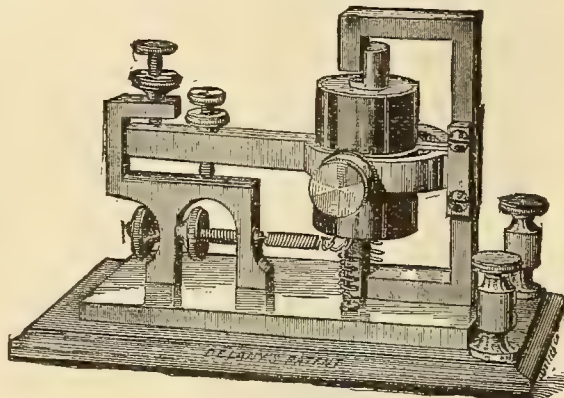
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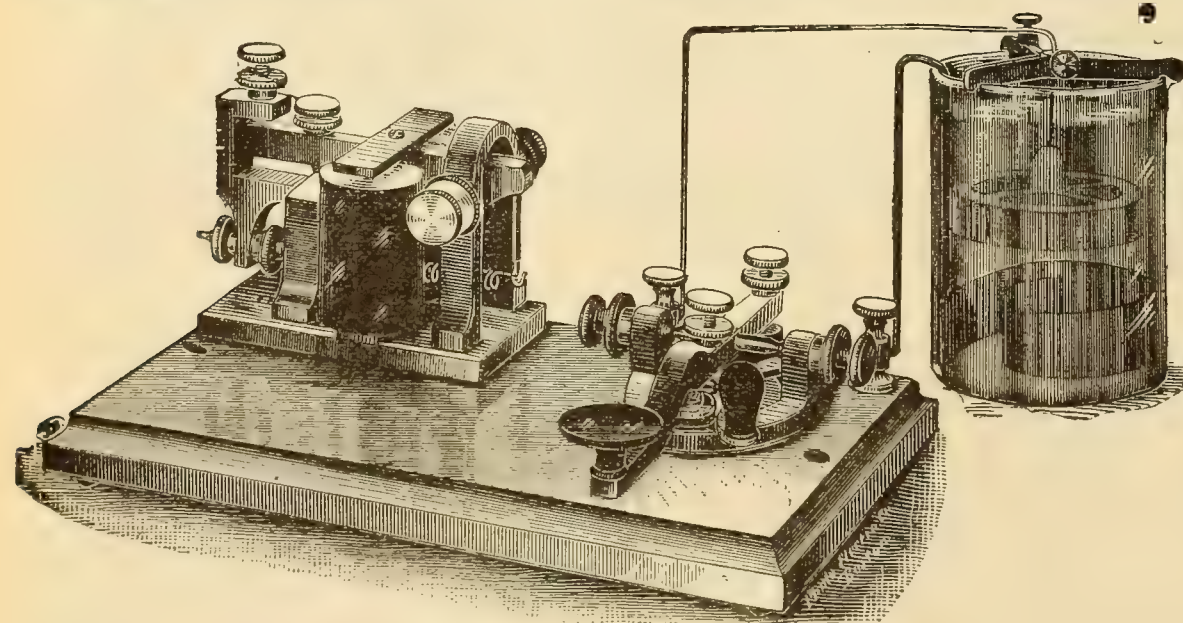
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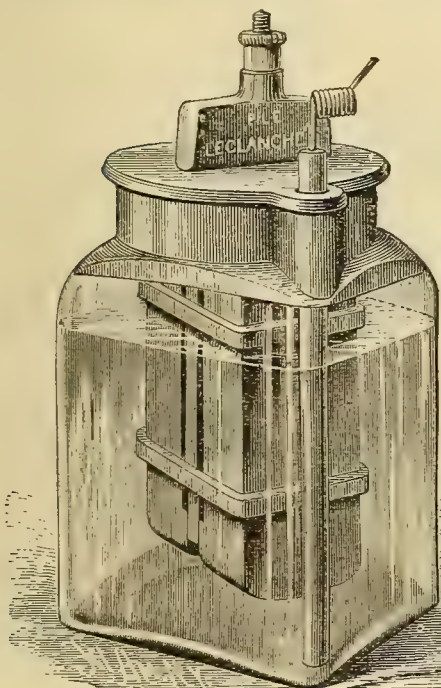
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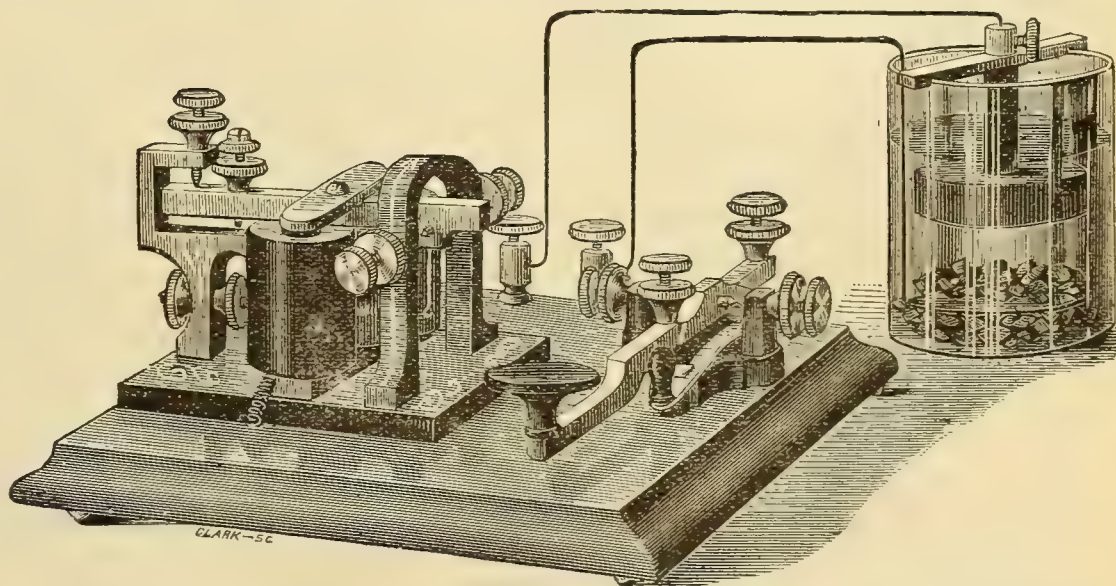
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In last issue of this paper Mr. Ross takes occasion to criticise our conduct in publishing his testimonial, which we did verbatim; the first part was given us orally; the second part we have in writing, all unsolicited; and in none of his letters, or personally, has he ever withdrawn or contradicted the testimony. Had we known, however, when we published it, that Mr. Ross was no longer our friend, we certainly should not have done so. Any one who met and talked with him at the Niagara convention will remember his earnest advocacy of our board, which, by the way, we have very much improved since that time. The fact of the matter is, Mr. Ross is a stockholder in the Western Electric Mfg. Co., and he transferred his patronage to them, and he feels sore to think he committed himself to us, and now seeks to injure us for having, in a business-like manner, used his voluntary testimony. He remarked to us one time when discussing Western Electric stock, "I drew my 100 per cent. like a little man." No doubt he desires to repeat that pleasant task this year, and has become their earnest solicitor and advocate for obvious reasons.

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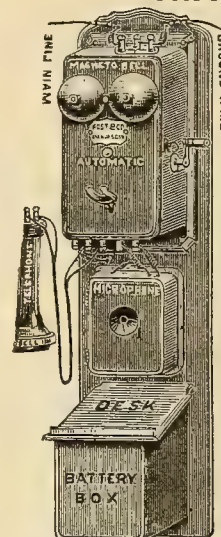
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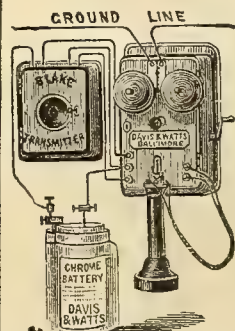
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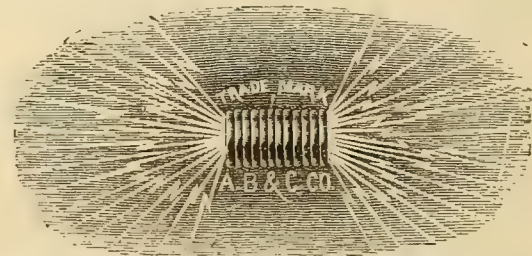
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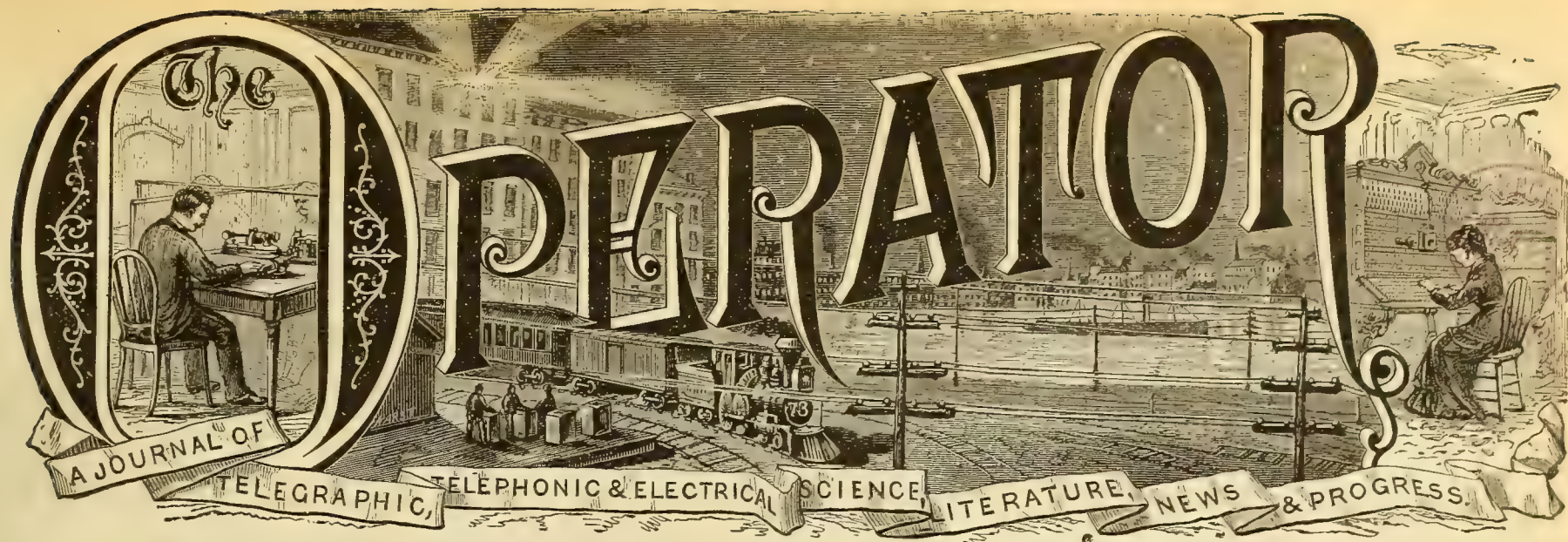
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### Individual Calls for Telephone Lines.

Although the telephone is, perhaps, the simplest instrument ever developed by the brain or constructed by the hand of man for electrical communication, it is very apparent that certain accessories, both before and after the fact, as it were, are essential to its success as a factor in business and social life. Since the telephone itself cannot generally speak sufficiently loud to notify its patrons when a message is about to be sent (nor, indeed, is such a state of affairs desirable), it was seen at a very early period in telephonic history that some calling or signaling device was necessary. The telephone was first introduced on private lines, usually of limited length, and generally with but two stations, one at each end, which were already built and fitted with Morse telegraph instruments. The Morse instruments were, therefore, utilized as the first telephone calls. It soon became evident that a degree of skill was requisite to work the Morse keys and sounders thus used, and that unless some more popular method of signaling were adopted the onward march of the new invention would be checked, and the little giant would remain a stunted dwarf. The result of this was a great increase in the number of electric bells manufactured, for any one could readily notice the silvery tone of the single stroke, or the imperative rattle of the vibrator, even when the monotonous rhythm of the Morse sounder would pass unheeded; and so on the before-mentioned private lines the bells succeeded the sounders, the sounders were laid on the shelf, and the telephonist was once more happy and contented. But only for a short time; for soon it was seen that the number of stations on a private line could not be limited to two; and when that number was largely increased, the constant ringing of bells, melodious as it might be *per se*, and sweet as the Bells of Corneville, yet became a trifle monotonous, and once more the wearied ear yearned for rest and silence. Moreover, the telephone exchange system by this time began to rise into view, and it was then considered peculiarly impossible, or at least undesirable, to have individual lines, or, indeed, less than five or six stations on any line. The projectors of the primeval telephone exchanges were or had been telegraph men, and the system they inaugurated was naturally a system of calling consisting of single stroke bells on a closed battery, the ringing being accomplished by breaking and closing the circuit the

requisite number of times; and the number of stations on each line varied from four to over a dozen. It is obvious, as stated above, that when such a number of stations were placed in circuit together, if much business was done on the circuit, the ringing would practically be perpetual and no peace or quietness could be obtained. Still it was found that some persons liked the continual jingle, even those who might be supposed to be troubled the most by it. An example on the point is the following, which came under the writer's personal observation: A reverend gentleman was a valued subscriber to a telephone exchange in one of the smaller cities in Massachusetts—his telephone and bell being placed in his study—and was located in one of the busiest circuits.

The exchange manager at length took pity on the clergyman and offered to place him on a quieter circuit.

To his surprise, however, the minister declined to be transferred, saying that he did not mind the jingle; that he rather liked it, if anything, and in fact never noticed it. He was, of course, not transferred. But when the astonished exchange manager related the circumstances to a mutual friend of himself and the divine, he was greeted with the dry remark: "perhaps he doesn't mind it, but it is very perceptible in his sermons."

This gentleman was an exception, an honorable exception, perhaps, but still an exception, and a demand, which is ever the pioneer of a supply, sprung up for an individual signal.

It is proper here, for the benefit of the un-initiated, that the term individual signal should be defined.

It signifies literally, a means for calling the individual. That is, in a circuit of say six stations, at the will of the operator any one of the six can be called without signaling or attracting the attention of the others. It is not the least of the wonders of the telephone that it has given an impetus to so many branches of electrical invention, and this branch of the "individual call" has been the most prolific, bore early fruit, and is still bearing. After the early demand for such a call-signal, it came to be seen that on the busy lines of our large cities, one, or at the most, two stations only could be practically operated, simply because when more than that number were placed on a line they were continually getting in each other's way. But on the social lines in suburban districts, or in exchange systems in the smaller cities and towns, prices could not be raised as they were in larger places, and it was, therefore, found necessary to do one of two things, either submit to the constant

ringing or find an individual bell or call that combined all the requisite virtues—one that was cheap and good, simple in operation and sure in result, one that could be depended upon to call the right man at the right time, and, what is equally important, one that would not call the wrong man at the wrong time; and, finally, one that was simple in construction, would not easily get out of order, that when out of order could be easily fixed by the exchange managers, who frequently were anything but *au fait* at such work, and one that was cheaply maintained.

Nothing answering these requirements was then in the market, but the demand was seen and the result was that the inventive genius set to work, and up to the present time some fifty patents have been issued on this one subject.

The essential points that every individual signal instrument should possess are the following:

1. They should be able to call up the station required.

2. This must be done to the exclusion of all the other bells or stations on the line.

3. When a station is to be called on a line and other stations are between the station calling and the station called, those between must not be rung up in passing.

4. A union, zero, or initial point and a method for bringing each apparatus to such point, so that all the instruments may commence each operation together.

Other and auxiliary operations are frequently performed or attempted, such as a dial and index finger, showing which station is being called, or an automatic cut out, which shall cut out all the telephones except the one wanted; but such operations are not essential and, in the words of a brilliant but short-lived contemporary, "in the attempt to make these instruments self-acting, they are made self-hampered."

Having thus briefly delineated the necessary virtues of a good individual call, we will describe the several principles which have as yet, in one form or another, been universally recognized.

These are, first, systems in which the features of strength and polarity are taken advantage of, employing apparatus similar to the quadruplex. It is obvious that if we have a line of four subscribers, and at each station we have a relay which, when affected by the current, closes a local circuit and rings a bell, by adjusting the relays so that No. 1 responds only to a weak current and No. 2 only to a strong one, we provide for two stations at once. If we now add two other bells, similarly arranged, but adapted only to respond to currents of opposite polarity, we provide for two more stations and secure for ourselves a system of four individual stations per line; such is one of the best methods suggested. To a practical man, this idea of employing some form of relay and a local circuit, including a bell, is more hopeful than most others.

Another way is to provide an instrument operated directly by successive pulsations of electricity, which rotate a star or ratchet wheel carrying on its axis a circuit wheel, which when brought to a particular position, differing in each instrument, closes a local circuit. This step by step principle is used in many such instruments.

These were the first attempts at solving the



problem. The next was on a different tack, and consisted in allowing each bell-hammer to move, but interposing a mechanical obstacle in the way of each hammer except the one at the station wanted. A bell of this class is used at West Winsted, Conn. (some sixty are in use there), and consists broadly of an electro-magnet carrying two armatures, one polarized, the other neutral. The neutral armature has a pawl, which step by step rotates a ratchet-wheel, that has at one point a notch between two teeth deeper than usual. The position of this deep notch differs for each bell, and only when the deep notch arrives in front of the pawl of the polarized armature which carries the bell-hammer, can the said bell-hammer reach the bell. The wheel is brought round by successive battery currents, which do not affect the bell-hammer armature, but when the wheel is brought to the proper point, rapidly alternating magneto currents are sent which work the polarized armature and ring the bell. These bells have given satisfaction. It is, however, but just to say that their success is in a great measure due to the exchange manager at West Winsted, who is a telegraph man of no ordinary ability, and who would certainly succeed in making any bells work that had any work in them.

The next novelty presented, and one that, although patented, is still a novelty to most of us, is one that is decidedly the germ of a wonderfully good system, inasmuch as it needs no complicated apparatus, and has no wheel movement, is as follows: The bells at each station are provided with two electro-magnets, and the circuits leaving the central station are so arranged—one series running concentrically and another radially, one of each class running into each substation—that it is only when the key of each is pressed at the same time that the bell at the junction of the two can ring.

Soon afterward another idea came on the scene. It was to have the signaling bell in each subscriber's station in a shunt or branch circuit; or in common parlance, short circuited, and using mechanism, either step by step or synchronous clock work, to break the short circuit at a stated time or a given number of pulsations, thus including the desired bell in the main circuit, when it could, of course, be rung. This idea at the present time appears to be the banner bell, and is gradually becoming popular.

Still another suggestion is to furnish each bell with an electric ground switch, a single current of a given direction throwing on a ground at each station. This, of course, cuts off all the bells except the first one. They are then restored to the line one after another, each one locking its hammer as the next one is brought into circuit. When the desired bell is once more cut in, it is rung by magneto currents.

We have thus outlined much of what has been done in this line of invention. It is impossible, however, even now, to overstate the difficulty of making a really good bell which shall accomplish all it should. When that bell does appear, its inventor may depend upon reaping a rich harvest.

We promise ourselves the pleasure at a future day of giving a detailed description of the several types and principles embodied in the best bells patented.

The ingenuity expended on some of them is wonderful to contemplate, and for the majority it is greatly to be feared that virtue will have to be its own reward.

#### Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 118. When we require an electro-magnet for long lines, or for circuits of great resistance, why do we call for one of high resistance? Is high resistance advantageous?

A. No. Resistance, considered by itself, is a positive disadvantage, because every additional unit of resistance added to the circuit tends to further enfeeble the current. But, as already stated, to make the most of the existing current, we require many turns of wire and the resistance is a necessary but unwelcome adjunct. If

we could obtain the convolutions without the resistance, it would be so much the better, but that is impossible; and it has been found convenient to designate magnets intended to work on long lines, as high resistance magnets; not because it is *in virtue* of their high resistance that they work better, but simply because they have the high resistance, and to denominate them as such is an easy way to distinguish them.

Q. 119. In making calculations on the strength of electro magnets, is the resistance of the battery to be taken into consideration?

A. In short circuits, where the resistance is proportionately large to the resistance of the rest of the circuit, yes. For example, in a local circuit of a Morse sounder there is practically no resistance outside of the sounder coil, except the battery. It is obvious, then, that it *must* be considered and the coil made equal to it.

But when the battery of a very long line is in question, it is not necessary to include the resistance of the battery with that of the line, because, though large, it is yet, in proportion to the line, very small; and to simplify the calculation, it is usually ignored.

Q. 120. Has the length of the iron core any effect on the working of an electro-magnet?

A. Yes. Electro-magnets with short cores both charge and discharge quicker than those with long ones. Advantage of this fact has been taken by the telegraph companies and all the later forms of relay have short cores. A magnet also works quicker when charged by a battery of many cells than when few are used. When strength rather than speed of action is required, it is well to employ magnets with long cores, because the convolutions of wire can then be increased in number without decreasing their distance from the core, by adding a great number of layers of wire.

Q. 121. What are earth currents?

A. They are currents which are always flowing through the wires, and which depend for their existence on a difference of potential between the two points of the earth at which the line is terminated. They are, therefore, currents flowing from one part of the earth to another, which being, of course, subject to the ordinary laws of electricity, and finding another path open to them at the ground plate, where they enter, divide there, part of the current taking the wire route to the distant point, the other part taking the route through the earth.

They vary in strength at different periods in the day and year, and sometimes are so strong as to render the working of a line difficult. They are then called electric storms.

Sometimes they flow in one direction, sometimes in the other, and in any case are very unwelcome visitors in telegraph lines.

They are particularly frequent on long cables, and endanger the safety of the cable. They also render testing with the galvanometer very uncertain and incorrect.

Q. 122. How may the effects of earth currents on telegraph lines be obviated?

A. On ordinary telegraph lines this can be done in two ways: The first mode may be adopted when two wires run parallel to each other, and consists in abandoning the use of the ground wires at the terminal offices, and looping the wires, so as to form a metallic circuit. In practice, if the wires are looped together at but one end, the result is satisfactory.

The second method may be used where there are *not* two wires parallel to each other, and is effected by removing the ground wire at one end of the line and lengthening the circuit by connecting another line running in another direction to it, so that if a straight line were drawn connecting the two end offices, it would be out of the direction of the earth current prevailing at the time.

In the case of submarine cables of considerable length, the same result is effected by the

use of condensers, which are interposed between the ends of the cable and the ground.

Q. 123. Are there any other currents which appear on telegraph lines without an apparent cause?

A. Yes. If the earth plates of a circuit are of different metals, a permanent current will be set up, varying in strength according to the metals used. For example: If a copper plate be buried in the earth at one end of the line and a zinc plate at the other, the current will be comparatively powerful. If one earth plate be of lead and the other of iron, the current will not be as strong as that developed by the copper and zinc, but it will still be quite perceptible.

This may readily occur, and to the amateur electrician might prove very puzzling. If, for instance, the wire be grounded on an iron gas pipe at one end of the line, and on a lead water pipe at the other, and a current appears, as under the circumstances it surely will, it needs some experience to determine its origin. When suspected, one ground or the other must be changed until no current passes.

This current has been utilized, under the name of the earth battery current. It was used by Gauss in Germany at an early date, was subsequently employed by Bain to work electric clocks, and in 1846 was used by Steinheil on a Bavarian telegraph line twenty miles long. For telegraphs, however, it has not attained any remarkable degree of success.

Q. 124. What systems of commercial telegraphy are in use at the present time?

A. In America, the telegraphs now in general use are: 1st. The Morse, with its improvements of duplex, quadruplex and harmonic telegraphy; its use is universal.

2nd. The type-printing telegraph, comprising the Hughes, Combination and Phelps improvements, used chiefly on trunk lines between Boston and New York, New York, Philadelphia and Washington, and New York and Chicago.

3rd. A variety of the automatic system, known as the "Rapid" telegraph.

In nearly every country the Morse system is prevalent, and maintains its supremacy on account of its simplicity, its comparative accuracy, and the speed with which it may be manipulated.

The Wheatstone needle system is still employed on many circuits in England, but is being gradually superseded by the Morse.

Its use is advocated by English writers for circuits, which have many stations, none of which singly do much work, but which collectively have enough business to occupy a wire; and for railroad service. The maintenance of the needle system is economical.

A dial system, called the Wheatstone A B C, is also extensively employed there, and is especially adapted for branch lines and offices in small villages where there is not enough work to pay for an expert operator. The Wheatstone Automatic is also much used. Indeed, England has been most successful in automatic telegraphy.

Q. 125. What are the principal special systems used in America?

A. The municipal fire telegraph system, the American District or messenger business system, the police telegraph, the Gold and Stock printing telegraph, and the automatic fire signaling system.

Q. 126. Describe in general terms the construction and operation of the municipal fire telegraph?

A. The fire telegraph system of America has repeatedly proved its great value, and is a well-known American institution. It has been brought to a state of great perfection by the Gamewell Company.

The lines all radiate from a central point, connecting with a number of signal-boxes in various parts of the city. They are uniformly what are called metallic circuits, the ground forming no part of the circuit; that is, the line leaving, for example, the copper pole of the battery, after making its circuit of the city, returns by another route to the zinc pole of the battery.

In large cities the signals transmitted from the boxes are carried by the wires to a central office, from which the alarm is given to the engine houses and other necessary points.

The action of the signal boxes is: when the handle is pulled, a detent is tripped, which permits a circuit wheel to revolve by a train of clock-



work, and so to break the circuit a given number of times, thereby giving the required signal. Portions of the edge of the wheel are made of non-conducting material and a metallic spring, which forms part of the circuit, presses on the edge of the wheel.

When, therefore, the insulated portions pass under the spring, the circuit is broken. It will be seen that by altering the relative number and position of the non-conducting portions of the edge of the wheel any required signal may be given.

The circuit being thus closed and broken by the revolution of the wheel under the spring, the armature of a relay is correspondingly attracted to and withdrawn from its magnet at the central office, and when falling back closes a local circuit and strikes the signal on a bell, at the same time recording it on a register. The operator then repeats the signal to every required point, and the alarm is given. In smaller places, although the operation of the boxes is the same, the alarms when sent in are automatically made known to the proper parties and to the public by automatic repeaters, which set in action bell strikers at pre-arranged points. The attendance of an operator is thus rendered unnecessary.

T. D. L.

#### Sudden Death of Mr. J. N. Ashley.

On Tuesday morning, April 26, Mr. James N. Ashley, editor of the *Journal of the Telegraph*, was taken with a congestive chill on his way to New York. Fortunately his daughter was with him at the time, and took him back to his residence at Greenville, N. J. Although the fact of his illness was known among his friends in New York, it at first caused no particular alarm. Indeed, we did not consider it of sufficiently serious a nature to even mention it in last issue of *THE OPERATOR*. Mr. Ashley, however, notwithstanding the united advice of three of the most competent physicians, and of every care and attention that love and devotion could suggest, sank rapidly and died at 5:30 P. M. on Monday afternoon, May 2. The immediate cause of his death was improper valvular action of the heart and congestion of the lungs. The funeral took place at Greenville on Thursday afternoon, May 5, and was attended by a large delegation of prominent New York telegraphers, among them being T. A. Edison, the inventor.

James Nye Ashley was one of the oldest telegraphers in the country, having been connected with the business in various capacities for over thirty years. He was the son of Samuel Ashley, an able lawyer, and was born at Providence, R. I. Before he entered the telegraph business he was assistant postmaster at Providence and was connected editorially with the *Sentinel* and *Republican Herald*, of that city. His first telegraph position was Manager of the House Printing Telegraph office, Providence, in 1851. He was afterward manager of the same company's offices at Springfield, Mass., Columbus, O., Boston and New York, and was subsequently appointed Assistant Superintendent under A. A. Lovett. Later he held the position of Night Manager for the Associated Press in this city, and then edited and published the *Telegrapher* until the death of Fred. J. Grace, when the *Telegrapher* was discontinued and Mr. Ashley became the editor of the *Journal of the Telegraph*.

In the latter part of 1853 or beginning of 1854, Mr. Ashley, accompanied by B. K. Baldwin, a House printing operator, now in the insurance business in Philadelphia, went to England to place the House printing telegraph upon the lines of the British and Irish Magnetic Telegraph Company. In consequence, however, of the effects of static induction on the underground

lines, it was found impossible to work the instruments with any degree of success, and the enterprise was abandoned.

During the war of secession he was army correspondent of the New York *Herald*, and afterward had charge of the *Herald* bureau at Washington. Since the retirement from the business of Mr. Watson, he has acted as secretary and general agent of the Telegraphers' Mutual Benefit Association.

Frank L. Pope, an old-time friend and former business associate of Mr. Ashley, furnishes the following particulars, which we take the liberty of publishing as received:

"I first became intimately acquainted with Mr. Ashley in 1868. He had been since the close of the war the agent of the New England papers in the Associated Press office. At that time I was editor and publisher of the *Telegrapher*, but finding my duties as superintendent of the Gold Reporting Telegraph too absorbing to permit me to give the necessary attention to the paper, an arrangement was made by which Mr. Ashley took charge of it, still retaining, however, his position in the Associated Press. In 1868, at the suggestion of Mr. Ashley, I prepared the book 'Modern Practice of the Electric Telegraph,' which was published at his expense. He attended to all the business relating to the publication and sale of the book, and but for his suggestion and co-operation it would never have appeared. In 1869 Mr. Ashley and myself, in company with T. A. Edison, and two or three others, organized the Financial and Commercial Telegraph, the object of which was to supply quotations of gold and exchange throughout the city by means of printing instruments. The office of this concern was at No. 80 Broadway. This business was continued a few months when we combined with it the construction and sale of private telegraph lines for the operation of which Edison and myself had jointly invented a printing telegraph especially adapted to that service. We carried on this business until May, 1870, when we organized a corporation called The American Printing Telegraph Company, which took the private line business, the management of the company still being under the direction of Mr. Ashley and myself.

"In 1871, the Gold and Stock Company, having obtained a controlling interest in this concern, consolidated it and continued it as their private line department, which afterward grew into the Metropolitan Telephone and Telegraph Company. This business was very successful from the start, and was only sold to the Gold and Stock Company because it increased so fast that we could not in any other way obtain the necessary capital to carry it on. In 1871, J. N. Ashley, F. L. Pope, S. C. Hendrickson and J. D. Lincoln formed an association to carry on the electric railroad signal business, which was continued until 1880, when the business was consolidated on very favorable terms with that of the Union Electric Signal Company, of Boston.

"Mr. Ashley continued to carry on the *Telegrapher* from the time of his taking charge of it, in 1868, until the death of Fred. J. Grace, editor of the *Journal of the Telegraph*, when he accepted a proposition to become Mr. Grace's successor, after which the *Telegrapher* was discontinued and its subscription list transferred to the *Journal of the Telegraph*. In consequence of certain complications growing out of the strike among telegraph operators, Mr. Ashley relinquished his position in the Associated Press, the month after the close of the strike, and thereafter attended exclusively to his other business."

Mr. Ashley leaves a wife and two children, who, with his aged mother, brothers and sisters, have the sincere sympathy and condolence of the fraternity in their great and sudden bereavement.

#### The Suits against the Consolidation.

After all the legal sparring and vexatious delay in the suits of W. S. Williams against the Western Union, and Rufus Hatch against the same company, they were formally brought to trial on Friday last, the 13th inst.

The number of lawyers retained on the case is

very large. Before the trial began men and boys brought in large piles of books, comprising ledgers, cash books, transfer books, and all the business paraphernalia of a telegraph office, which they threw carelessly about the floor. Judge Truax smiled grimly, but the fifteen or twenty lawyers expected, was the observed of all.

Mr. Robert Sewell opened the case for the plaintiff, and read parts of the complaint reciting the object of the action. He also declared that if the witnesses told the truth the true import of the meetings at which the consolidation was effected would be disclosed. In December, 1880, he said, the American Union had established itself throughout the country, but the majority of its stock was soon under the control of the Western Union Company, as was also the Atlantic & Pacific stock. At recess Mr. Sewell announced that he was unwell and did not feel able to continue, and that the case was adjourned until Monday morning.

Both suits were brought for the same purpose, viz., to restrain the Western Union Company from issuing \$15,526,590 of its increased capital stock to its present stockholders on account of dividends which those stockholders would have received if the surplus earnings of the company since 1866 had not been invested in real and personal property. The injunctions already granted restrain the Union Trust Company and the Western Union's directors from assisting in the distribution of such a stock dividend. Immediately after Chief-Justice Sedgwick made his injunction order some time ago, the Western Union Company, acting under the advice of counsel, issued to its stockholders, through the Union Trust Company, certificates of indebtedness in lieu of the shares of stock which it was restrained from issuing. This proceeding was the ground of motion to punish the defendants for contempt.

In connection with a pending injunction in these cases, the Western Union now holds the following letter, written a week before the preliminary injunction referred to was issued:

"P. O. address, box 412.  
"OFFICE OF SEWELL & PIERCE,  
"[Private.] Attorneys and Counsellors,  
"ROBERT SEWELL, } No. 206 Broadway,  
"JAMES F. PIERCE, } NEW YORK, April 28, 1881.  
"MY DEAR SENATOR: The telegraph people have industriously circulated a report that there was to be a decision of the W. Un. to-day. My partner, Mr. Sewell, says it is a libel on the Court, who offers to bet two to one that decision will not be made to-day, and when it is made it will not be in favor of the Co.

"Faithfully ys, JAMES F. PIERCE.  
"HON. A. S. PADDOCK."

This was written by one of the attorneys for the plaintiff, and addressed to ex-United States Senator Paddock. It is certainly strange that one of the counsel should thus, a week in advance, be able to speak for a judge on the bench, and to bet 2 to 1 on the result, and it may yet further complicate the tedious process of law.

In the Pennsylvania Lower House, the bill to prevent consolidation of the telegraph companies in that State is now well up on the second reading calendar.

Meanwhile the Monopoly quietly goes on monopolizing.

An agreement has been signed by the officers of the Western Union Telegraph Company and the president of the Northwestern Telegraph Company for a lease of the latter's lines. The negotiations which have ended in this have been pending a long time, but the matter has been more particularly discussed in the last two weeks, during which President Simmons, of the North-



western Telegraph Company, has been in this city. This company has its eastern terminus in Chicago, and thence its lines extend to the principal cities and towns of Wisconsin, Minnesota, and out into Dakota Territory.

#### Reminiscences of the Pacific Coast Telegraphy.

The telegraph at that time was a source of great curiosity to almost every person along the route, particularly to the native population, who looked upon the construction of the line with the greatest wonder. Many of them in ignorance of its real purpose and not understanding the use of the poles erected along the road at regular intervals, strung with wire with a cross-arm on each pole, conceived the idea and expressed it as their belief, that the Yankees were fencing in the country with crosses to keep the devil out.

From this period the work was successfully carried on, without any incident of importance until we reached San Jose. At this place the first regular station was opened. The office was fitted up on the day following our arrival, and I soon had it prepared for business. While these preparations were being made the portion of the street fronting the office had rapidly filled up with a crowd of people, a large proportion of whom were native Californians, all manifesting the greatest interest, and desiring to know what was going on. The day being warm, the windows of the office were wide open. As they opened on the sidewalk, all that I was doing inside was plainly visible to those standing without. Observing the anxious and inquiring expression on the faces of those who had managed to get near enough to thrust their heads through the open window, it occurred to me to act in a very mysterious manner, in order to see what effect it would have upon my spectators. I had just received the first message from San Francisco, which, after it had been copied, I placed in an envelope. On seeing me do this my audience thought, as I supposed, I was preparing the message for transmission. I took it from the table on which I had placed it, and instead of handing it to the boy for delivery, I put it, holding it in my hand, under the table which was provided with sides sufficiently deep to hide the envelope from their view. As I did this I kept my eyes fixed on the wire, while, with my right hand, I took hold of the key and began working it. The moment the crowd heard the first click of the instrument they all rushed from under the veranda out into the street to see the message in the envelope pass along the wire. On seeing them rush out tumbling one over the other to catch a glimpse of the message, we on the inside burst out into one long and continued roar of laughter. Our laughing seemed to puzzle them still more. But little by little they began to realize that they had been made victims of an innocent joke. They at first manifested signs of disappointment that their expectations had not been realized; but instead of passing any time in vain regrets, they immediately set to work to find out what really had become of the mysterious message. And, after all, their conception of this, although a mistake, was a very rational one. To one who had neither heard of the telegraph and electricity, nor conceived the possible existence of the latter, what could be so natural than to suppose that the envelope and its contents were propelled under the agency of a motive power along the wire from one point to another. As they had failed to see it pass along the wire, their second supposition was that the wire was hollow and that the envelope with its message inclosed was forced through the hollow part, and with this idea they asked whether such was not the case; nor would they believe the contrary until, for themselves, they had examined the end of the wire. Conviction on this point put an end to their conjectures. The telegraph was to them the very hardest kind of a

conundrum. It was impossible of solution. Their final conclusion was that it was an enchanted spirit—but whether a good one or an evil one they could not quite determine—over which I had such control that it was obliged to do my bidding. Under this impression they departed one by one, looking upon both the telegraph and myself as something, as the Scotchman would say, “uncanny.”—*James Gamble in the Californian.*

#### Organizing a Telegraphers' Society.

Since the suggestion made in these columns a few issues ago, that the members of the fraternity draw together and form a little “consolidation” of their own—“an organization which, without the aid of grip-signals and dark lanternism generally, will purify the profession, and lift it above the level of the common store clerk”—we have received many letters favoring the proposed association. We are glad to notice also that, in addition to the efforts in progress by the Erie operators to form a railroad telegraphers' association the commercial operators of this city have already taken the first step in the forming of such a society.

At a meeting of prominent telegraphers, assembled May 7, in the parlor of the United States Hotel, over one hundred being present or represented, it was decided to organize a society to protect the interests of the fraternity. A general discussion took place, in which it was demonstrated that the path of the operator is a downward one.

A committee of nine was appointed to draft constitution and by-laws, which will be presented at the next meeting—on Saturday afternoon, May 22—for adoption. It was decided *notto* have a supreme headquarters, but to be divided into small bodies, say 50 members each, each body to have an advisory committee of three members, who will meet twice a year, to exchange views on matters pertaining to the society's welfare. It was also decided to make it an open society, secret ones having proved failures. This programme met with unanimous approval, and a general invitation was extended to all interested to be present at the next meeting.

#### Sioux City to St. Paul by Hand-Car.

Mr. H. C. Hope, superintendent of telegraph on the Chicago, St. Paul, Minneapolis & Omaha line, has just made the trip from Sioux City to St. Paul on a hand-car. The overflow of the rivers had washed out the telegraph poles at different places all along the line, prostrating the wires and suspending communication. In order to restore the lost connections, Mr. Hope, with two repairers, left Sioux City at 3 o'clock on Sunday afternoon, April 24th. The party stopped wherever there were breaks, and with the assistance of the forces of line repairers at the nearest stations made all the necessary repairs. They found the track still secure nearly all the way through, but in many instances passed through long stretches of water, which was nearly up to their waists as they stood on the platform of their car.

At Mankato they found the Minnesota River up on the main street, in front of the Mankato House. In a great many houses in the west end of the city the water was flowing in at the windows. At St. Peter the river extended from bluff to bluff. The high water track of the road was overflowed, so great was the rise. Mr. Hope had to build a mile of telegraph wire along the bluffs south of the town in order to restore the communication. The depot was flooded and appeared to be in the middle of the river, so extensive was the expansion of the stream.

The party reached St. Paul on Thursday afternoon, April 28, where they received the warmest commendation of the officials of the road for the energetic and intrepid manner in which they had performed the arduous service.

#### The American Cables Under Way.

The cable steamship *Faraday* left the Thames on the 6th inst., at 1 P. M., having on board nearly 1,000 miles of the new cable, constructed by Messrs. Siemens Brothers, for the new American cable company. She passed the Lizard, off the coast of Cornwall, going west, last Tuesday. Mr. Brittle is in charge of the work.

The *Faraday* will first lay the shore end off the English coast, and then cross over and lay the shore end on our coast, where she may be expected toward the end of next week. She will then return, take on the deep sea portion, and pay it out as she crosses a second time. It is hoped that this cable will be in working order by the middle of next month. A sister cable will then be laid, which will probably be working before the 1st of November.

This will most likely inaugurate a lively competition with the English cable monopoly, and insure a reasonable tariff to the general public.

#### A Pilgrimage to a Notable Grave.

MAGNIFICENT MONUMENT TO A DECEASED SUPERINTENDENT.

To the Editor of *The Operator*:

SIR: The operators of the Philadelphia, Reading & Pottsville Telegraph Company may well be proud of their action in erecting to the memory of their late Superintendent, Calvin T. Sellers, the handsomest monument ever placed over a telegrapher, and certainly the most perfect piece of sculpture ever executed to illustrate a telegraphic subject. It was to see this monument that I, at the invitation of some of the operators of that line, recently made a pilgrimage to Reading; and, believing that not only does it reflect credit upon the grateful hands that raised it, but also upon *all* telegraphers, I have written, Mr. Editor, for your columns, if acceptable, a brief account of its peculiar appropriateness, beauty and costliness.

It is now three and a half years since Calvin T. Sellers, the youthful superintendent of the P. R. & P. Telegraph lines, died, but the recollection of the great outpouring of sympathy and the numerous tokens of affection and sorrow is still fresh in the minds of those who remember the occasion. Few then present can have forgotten the seventy-three carriages filled with sorrowing telegraphers and railroad men of all grades that followed the hearse to the cemetery where the interment took place with imposing masonic ceremonies. The esteem in which this young man was held by his subordinates was strikingly illustrated when, after his death, two operators in Reading met, constituted themselves into a committee on floral offerings, and were immediately overwhelmed with offers of money from all sides. In 24 hours over \$200 in money had reached this committee. In addition to the money thus forwarded many places sent their own designs. Pottsville, Williamsport, Philadelphia and adjacent towns sent magnificent offerings of flowers in design as various as the florist's art could devise. Among them were: From Reading, in white flowers, a switch and a Morse key; from the Central Division, a telegraph pole standing in a bed of flowers, with the broken wire dangling its ends among the lilies and tube-roses; from the Schuylkill County operators, a cross and pillow of white flowers, bearing the inscription, “At Peace;” from the operators of the Philadelphia and Norristown branch, a column of white flowers, four feet high, with a pillow base; from the Philadelphia operators of the Chester branch, main line to Bridgeport, a white floral globe on a floral pedestal, three feet high; from the operators of the Catawissa and Williamsport branch, a pillow and cross, and standing column, over three feet high, inclosed in a glass case; while from other points came cross and crown, broken lyre, anchor and other designs in flowers, to denote to the aged mother the esteem in which her dead boy was held.

But it was in their subsequent action—in the lavish expenditure of money to secure a fitting monument and the artistic execution of their design—that these warm-hearted operators showed what gratitude can do for one who has made himself beloved. Indeed, to intrude a selfish parenthetical remark, I might say that no



one who is half-deserving need feel himself neglected among such a body of telegraphers—a fact which was again demonstrated in the cordial reception and royal treatment accorded to myself and a fellow pilgrim to the grave of Calvin Sellers. Nothing was spared in ministering to our comfort, and in leaving us no room to doubt the hospitality of Reading; while to Assistant Superintendent Adams, of the P. R. & P. T. Co.; Mr. Fred. H. Gartlan, the manager, and an old operator known equally as well and favorably on two continents, and Mr. Wiand we are particularly indebted for a sense of courteous treatment received.

A drive of a mile and a half out of Reading brought us to the Charles Evans Cemetery, where, in a sequestered spot overlooking one of the finest valleys in the State of Pennsylvania, repose the remains of Calvin Sellers. Here we found the monument over our dead friend, which we had come so far to see, and saw it under the most fortuitous circumstances. In a quiet spot, with lovely weather, the fresh green leaves recently budded; Nature just assuming her greenest hue, and clusters of violets peeping from underneath the hedge-rows; with the robins in the neighboring trees piping their first simple songs of Spring; with the fair valley beneath, where it takes but a faint stretch of imagination to see "the lowing herd wind slowly o'er the lea;" and with such well-informed and intelligent guides as Messrs. Gartlan, Adams and Wiand, we missed none of the sacred beauty of the sculptor's art nor of the lovely surroundings of this peaceful God's Acre.

The Sellers' monument is a column of pure white marble, twenty feet in height clear of the base, four feet six inches square at the bottom, and surmounted by an urn. The inscription reads as follows:

CALVIN T. SELLERS

DIED

November 24th, 1877,

AGED

34 years, 4 months, 22 days.

ERECTED

BY THE TELEGRAPH EMPLOYEES

of the

PHILADELPHIA AND READING RAILROAD COMPANY,

As a mark of respect

To their lamented

SUPERINTENDENT.

Beneath this inscription, clean-cut and perfect in the marble, are the symbols of our profession. There are—as distinctly as though they were both about to answer, "I, I,"—a relay and sounder, while beside them is a key, which you feel impelled to grasp. The minute details—the spiral spring on the relay, with the delicately-knotted thread that connects it to the binding-post; the thumb screws, with the "milling" on their edges so perfectly imitated; the wires through the binding-posts, with the insulating material apparently roughly shaved off at the ends, and the armatures so finely adjusted yet showing to the professional eye that the circuit is "open"—broken, possibly, forever—make one doubt that it is really the work of the chisel and mallet, and it is only after a close inspection of the marble that he is convinced of the sculptor's consummate art. Beneath this piece of work, cut also in the same block of stone, is a scene in bas-relief, showing the railroad tracks running on the banks of a river, with the wires, insulators and posts, and the mountain scenery as clearly depicted as they would be in a steel engraving.

When the operators first asked for estimates for this grand work, offers were made by Philadelphia and other artists, but none was less than \$1,500. The task, however, was finally undertaken by a Reading sculptor, who felt a local pride in executing it at actual cost price, and it was finally done for \$1,000. Then willing hands carried sounder and key, and relay and bits of wire daily from the telegraph office to the artist's studio, and for three months eager eyes watched with professional keenness the progress of that piece of telegraphic sculpture. The result was a splendid and true representation in marble of our bread-winning implements, and a monument, creditable alike to the noble dead and the noble donors. Calvin Sellers was a king of men, but his late associates have proved that they were well worthy of his confidence; and the reverent manner in which they stand beside the "storied urn" that crowns his tomb, and tearfully whisper to the wandering stranger of the

knightly qualities which endeared the deceased to them, show that the time has not yet arrived when kind or even fair treatment is thrown away upon telegraphers; and that in impartial and just rulings a chief may endear himself to his men for all time—in death even stronger than in life. When robed in office it is loyalty which makes them rally around him; but it is pure affection that leads them thither when the lamented chief slumbers beneath the violets in the seclusion of a rural churchyard.

WERNER.

### What Might Have Been, and What Is—A Very Short Chapter of Recent Telegraphic History.

To the Editor of The Operator:

SIR: It is not necessary to go back a great many years in recollection to enable us to reach the time when the present General Manager of the Western Union Company held a position in that same corporation analogous in many respects to that which he has but recently resumed after so many changes.

In looking over the field since that time to the present a great many things become clear and transparent that were at the date of occurrence shrouded in doubt and mystery. Motives for many acts are becoming more and more apparent. Objects intended to be accomplished; results sought to be attained; promises of all kinds made and kept, or otherwise, as the case may be, crowd upon the mind, and in the light of the latest developments each one assumes its proper proportions in relation to the whole, and drops into its proper niche, in completing the present form of the structure.

At the time already spoken of, the then head of the Western Union was a man of will and character, who was thoroughly conversant and familiar with the practical working of the institution. He was eminently qualified in every way for the position. Those who surrounded and supported him were men of like calibre, the very foremost of whom was he who has to-day practically taken up the line, where, to the regret of all, it was so suddenly and unexpectedly dropped by the firm hand that had securely and safely guided it up to that time.

The causes which led to the separation between these two were a matter of public record and need not be further entered into here beyond a

The present general manager is well-known to be a man of energy and activity, and when this much is said it will be readily understood how irksome his position as president of the Atlantic and Pacific must have been with the talented young vice-president as his superior officer.

Such was the state of affairs up to the time when General Eckert's contract with the A. & P. expired; that is, from the time of the pooling arrangement, the talented young vice-president had everything his own way. It was a noble prerogative, and ignobly he used it. The history of his régime will not be soon forgotten. Then, however, the clouds began to appear in the sky, the wind began to rise; but the ship was staunch and firm, and the captain was not afraid.

Brave youth!

The vessel he commanded had a monopoly of the trade in which she was engaged. The people had to purchase the cargo at the price set by the owners. They might protest if they wanted to; that was their privilege, but they must pay the price all the same.

Soon the American Union vessel appeared in the offing, and started in vigorously to secure part of the traffic.

No compromise was her motto.

She would never haul down her flag, and she hasn't.

The public were to—but, perhaps, it is just as well to maintain silence in this respect.

Well, to resume, a good many of the most experienced officers and crew went into the service of the new craft. Her success was in-

He was young, as has been already said, and was entirely innocent of all knowledge or experience pertaining to the business. He had views, however, such as they were, and he had a policy, a financial policy, that was to take the shape of an executive committee, with himself as chairman, to which committee all expendi-

tures in sums exceeding a dollar and a half or thereabout must be sent for approval.

By an astonishing unanimity of feeling no bills were ever approved by the Committee, except those cutting down expenses, reducing salaries, and paying for their own services, at the rate of six dollars an hour while they sat. The success of the policy was great. Large and steady dividends were paid.

It was a good plan for a short cruise.

What if the sailors and subordinate officers looked on with alarm, and began to grumble at the kind of treatment they received. Old tars who had weathered many a storm, and whose experience would have been of inestimable value in consultation, were ignored.

It was fair weather in the open sea, fine breeze, and no other craft in sight. What matter if the captain was ignorant of navigation. Any ordinary land lubber could sail the ship easy enough.

Sure!

Weak from lack of sustenance, in the form of ducats, and its opponent so badly crippled from the same cause, that radical measures had to be applied, and behold, the pooling arrangement was effected, and peace restored.

Singularly enough, this was a contest in which no quarter was given or received by either side, and yet nothing but quarters, it may be said, were received. In telegraphic history this memorable affray will be known by the title of the "twenty-five cents" struggle.

Certain results were to be arrived at by the cessation of hostilities besides that of dividing the profits, one of which was that the late ban-tams should be given seats on the top perch with the rest of the game birds. How this agreement, however, was *not* carried out, is pretty well known.

The situation had, meanwhile, undergone some wonderful transformations in numerous essential respects. The family who had, after the demise of President Orton, the largest interest in the stock, and who, therefore, had the best right to rule, was about this time augmented by the alliance of a brilliant young gentleman to its ranks.

mere suggestion that, perhaps, the real difficulty resulted from a minor difference between two characters equally strong, equally experienced, and each fully convinced of its own correctness.

The war that followed after the parting was long and bitter, and was maintained by the now defunct Atlantic & Pacific until it became so instantaneous and astonishing. Everybody who has been treated with injustice and oppression rejoiced. Bright days were at hand and \* \* \*

The brave youth struggled manfully, but ineffectually, until he ran his vessel on a sand-bar, and the other vessel came to the rescue, and picked him up out of the ocean, where he had madly plunged in his desperation and terror. He is understood to have since turned his attention to the navigation of ferry-boats.

It will hardly do to wind up this article without a slight reference to the principals in the lengthy contest. It is pretty well understood now that if the verbal agreement made at the termination of the "25-cents" struggle, namely, to admit Mr. Gould and his friends into the directorship of the Western Union, had been carried out the American Union of to-day never would have had an existence.

In this view of the matter, it becomes very readily apparent that the organizers of that corporation knew what they were talking about when they said they were not to be gobbled up, and that for this time at least the opposition would not go the way of all previous oppositions, and, sure enough, they haven't.

The cormorant of the past has at last been swallowed, and the Western Union of to-day is only the Western Union in name, and the American Union in fact.

It was a gigantic undertaking, and shows a giant-like power in the planning and executing of the same.

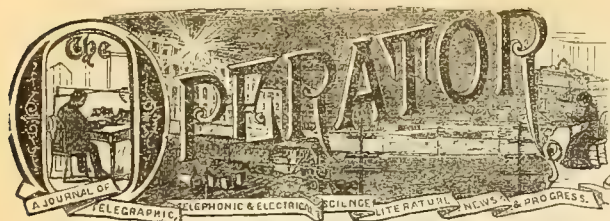
One other thought presents itself. Suppose the position and power held by the late talented young vice-president had been in the possession of an experienced and capable antagonist of the general managers, several of whom could have been readily found, would things have reached their present pass at this time? Under all the circumstances it is not the proper thing to wind up this article with the caption at its head:

"What might have been and what is?"

N. Y., April 20, 1881,

TOM TANGLE.





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Subscribers desiring their addresses changed, should give the old as well as the new address.

## JAMES NYE ASHLEY.

James N. Ashley, the veteran telegrapher, genial scholar and editor of the *Journal of the Telegraph*, has been laid at rest since our last issue; and in the little churchyard at Greenville, N. J., where he spent some of his happiest days, he "sleeps the sleep that knows no waking."

Mr. Ashley was one of those veterans whose memory should be perpetuated, and whose edifying lives should be held up for emulation. He was a firm friend of the operator, liberal in his views, though mellowed by years of experience, and superior to all wild and fanatical opinions and influences. As the editor of the *Telegrapher* he stood fearlessly to our interests during the Strike of 1870, defended our course with eminent courtesy and propriety, and uncomplainingly suffered more, probably, than any one else from the failure. His telegraphic writings at all times were most instructive, both in their elegance of diction and traits of sound common sense, qualities which never failed him in the twelve long years that, in his editorial capacity, he stood on our lookout through fog and storm to give us the first warning signal when danger approached. The late William Orton, unlike some of the so-called managers of the present day, was a close student of our literature—a fact which may partially account for the great telegraphic chieftain's apparent astuteness in reading our professional character—and he was often indebted to the *Telegrapher* for valuable hints in the delicate management of his vast trust. He was a warm friend and admirer of Mr. Ashley—a good character in itself—and, even when the criticism was adverse to his policy, he frequently expressed his approbation of the modest editor's sensible arguments and amiable qualities. If the late Mr. Ashley had any fault at all, it was an excusable weakness for being occasionally over-kindly or indulgent in his criticisms of rising young men. But he was fearless and uncompromising in his opposition to mismanagement, tyranny and oppression in every guise. He never hesitated to trace an evil or an abuse to its source and call the perpetrator to account. Many of the most important reforms which have been made in the service are traceable directly to his personal influence—an influence largely due to his sound judgment, inflexible integrity of character and profound fidelity to his own convictions of truth and justice.

Though he had accomplished so much and had seen the telegraph grow from its earliest infancy, Mr. Ashley was still a comparatively young man—younger than some of us who are still successfully beating back the approaching Shadow.

While past the spring-time of life, feeble age had not yet come upon him, and to the last he displayed all the freshness, vigor and gaiety of youth. His life was not worn out, but simply closed like a flower at sunset.

His loss is keenly felt by the profession at large, but still more so by those who were familiar with his noble and chivalric character, who have been guided by his softening and refining influence; who have for years sat at his feet, so to speak, to drink in eagerly his liberal and inspiring outpouring of thought. There was a subtle charm in his method of composition, and intense feeling in his pleas for justice; indeed, some of his literary essays were like sweet melodies, and seemed to lack but the accompaniment of the lute. But the Minstrel has at last written his final rhapsody; he has warbled his swan-song, and peacefully passed away,

"As a child in its cradle sinks to sleep,  
When evening's earliest shadows creep,  
Smiling, as if still at play."

If that English improvement on the telephone which they have elected to call an "electrophone," proves to be as perfect as the cable dispatches represent it, there can be no doubt of the universal adoption of the telephone on deep sea cables as well as on long land lines. The enthusiastic inventor maintains, so the cable tells us, that it is just as easy to talk across the Atlantic as from one room to another. It is by many supposed that the "electrophone" case of ocean cable conversation is the first instance of the kind on record. This, however, is a mistake. In Count Du Moncel's work on the telephone, published in 1878, it is distinctly stated that articulate speech was in that year transmitted through the cable between Guernsey and Dartmouth, a distance of 60 miles. Mr. Preece, of the British Postal Telegraphs, also conversed in the same year over the cable between Dublin and Holyhead, a distance of 67 miles. The telephone under its ordinary name was, in both cases, the instrument employed. By a curious coincidence, while this new "electrophone" is being tested between England and France, a company is being formed on this side of the ocean to utilize the invention of Robert M. and William Lockwood in improved telephones, "based on the principle of molecular disturbance and the suppression of all vibration." By this process a whisper in New York is distinctly heard in Philadelphia, and it should not be surprising if this "electrophone" turns out to be the same idea. The various inventors, however, can settle that question among themselves. It is enough for us to know that the telephone is realizing all the predictions made concerning it.

THERE can be no more touching marks of devotion than those paid by sorrowing hearts to the memory of a dead chief, for it is then, if ever, that an oppressed subordinate may safely cast aside every unworthy incentive to be liberal. In the death of Calvin T. Sellers, the toiling operator lost one of the truest, the best, most indulgent and just superintendent's that ever had charge of a district. His men, who fairly idolized him, were not slow in testifying to their affection, and in making his record enduring in marble; and we take great pleasure in describing the noble monument, through a reverent pilgrimage to the spot, made by our correspondent, "Werner." Telegraphy in general has produced, and is still disgraced by, some of the meanest white men

ever placed in official positions; while, on the other hand, we can boast of some of the truest, the gentlest and the most enlightened. But the unworthy are inevitably unmasked and the true-hearted and brave must, sooner or later, find their guerdon in the unmelting loyalty of an overwhelming multitude. A better example of the unquenchable affection of men for Man could not be given than is found in that shady dell in the Schuylkill Valley, near Reading, and inscribed on the marble monument erected by sorrowing telegraphers to the sacred memory of Calvin Sellers.

NEXT Thursday the Western Union athletic games will take place at the Manhattan Club's grounds, and the "boys" are consequently on the *qui vive*. These games are good for the health, and indirectly for the better working of the service, and should, if properly conducted, be well patronized. There is no antagonism between intellectuality and reasonable athletic training and exercise; indeed, the latter rather promotes the former. Some of the greatest leaders of the world, such as Richard I. (Cœur de Lion) of England; the Roman Emperor Maximus, and Scanderberg, four centuries ago King of Albania, were all famous athletes; while the Olympic and Pythian games were classed among the greatest events of the year. The records made by telegraphers last November—the one mile walk by D. C. Donohue in 7:57½, and the three-mile walk by the same gentleman in 25:48; the half-mile run by W. B. Waycott in 2:24, and the five-mile go-as-you-please, in which T. Marrin covered the distance in 30 minutes 41 seconds—were all highly creditable, and must serve to increase the interest felt in the coming events. We wish the boys fine weather, much enjoyment and good records; and if some of the entries prove to be as fleet of foot as they are dextrous in handling the key, we shall not be disappointed.

IN our issue for February 15 we printed a copy of a letter written by Professor Morse, May 24, 1845—just one year after the first message was transmitted—in which he expresses the hope that the receipts of each office will soon mount up to at least five dollars per day. These old documents throw much light on the rise and growth of telegraphy and electrical science. We are, therefore, glad now to call attention to another old letter (in the possession of Mr. Latimer Clark) exhibited in London on the 11th ult. It was written in London on Dec. 15, 1716, by Sir Isaac Newton, and addressed to Dr. Law, who resides in Suffolk. The remarkable thing about this letter is that Newton seems to have anticipated Franklin's great discovery. The passage touching upon this point is as follows: "I have been much amused by ye singular phenomena (the word phenomena is written in Greek characters) resulting from bringing of a needle into contact with a piece of amber or resin fricated on silke clothe—ye flame putteth me in mind of sheet lightning on a small (how very small) scale. But I shall in my epistle abjure Philosophy whereof when I come down to Sakly I'll give you enow."

AT last the laying of the projected "American Union" cable has been commenced, and the arrival of the *Faraday* off our shores about Friday next will be the first substantial intimation to Great Britain that her monopoly of the cable business is to be broken. There seems to be no



foundation at present for the rumor that an arrangement has been entered into by which the American cable company will not compete with the existing cable companies. This is just as it should be, and if our new cable company will charge the lowest possible fair rate it will have all the business it can handle. This was demonstrated during the prevalence of low rates, some months ago, when the Western Union kept a quadruplex and duplex at work night and day to North Sydney, and a quadruplex to Duxbury, carrying messages for the ocean lines. This immense volume of business can be retained by adopting a fair tariff—say, twenty-five cents (one shilling) per word.

By the death of Mr. Ashley, THE OPERATOR has had one more exclusive duty imposed upon it, namely, the making of our history and the handing down to posterity of the record and character of Colonel This, and General That, and Judge The-other—in fact, of Tom, Dick and Harry. It is primarily the duty of the grubbing newspaper man to collect and print all the fugitive odds and ends of life. Then, after the lapse of years, comes the professional historian to read the bound numbers, to dilate upon this thing and expatiate upon another, and in fact to “notch the centuries in the eternal rock.” As a matter of fact, THE OPERATOR has already made a trifling notch or two in the eternal rock on its own account, but since we are called upon to take up the lines where Mr. Ashley left them, and to embalm the record of friend and foe alike in the art preservative of all arts—cold type—we shall endeavor to be as discreet, just and courteous as he was.

THE stringent laws with regard to underground wires now being passed in some cities, particularly Chicago, are decidedly unfair. The existing monopoly, which has already strung all the wires which it needs, thus gains an advantage over its competitors struggling into existence, which, under the new rules, must lay subterranean wires. It is a proverbial fact that there is no thicker head than that of your average city alderman, and their reputation for downright stupidity will not suffer in the matter of ordering telegraph wires underground. All the existing companies should have reasonable (at least two years') notice; and provision should also be made for the much-hoped for, but as yet unborn, “opposition.” Anything else will put an end to the progress of American telegraphs and telephones, and will guarantee to the existing company that which they most sigh for—a monopoly.

THOSE who are living on fixed salaries are just about beginning to feel the effects of the rise in real estate and the consequent rise in rents and enhancement of values of all kinds. Many employers have recognized this fact by promptly acceding to fair demands on the part of their employes for increased wages. In telegraphs the salaries seem to have, where they vary at all, a downward tendency; although a modest but firm remonstrance might have a stiffening effect on the market. Since our English professional brethren have set us an example of dignity and firmness, it might not be amiss for us to examine into the nature of our prospects.

It will be thirty-seven years next Tuesday week since, on May 24, 1844, the first dispatch ever transmitted by a recording telegraph was sent from Washington to Baltimore, Prof. Morse

being in the chamber of the Supreme Court, at Washington, and the receiver, Mr. Alfred Vail, at the Mount Clare depot, Baltimore. The exact date is given upon the authority of Mr. Field. In this, the wire age, we can better appreciate the text of that brief message dictated by Annie Ellsworth, “What hath God wrought.”

Is it not a little unpatriotic for “American” cable companies to have their cables manufactured in England? Of course, if we go abroad at all for good workmanship, we can obtain most satisfaction from the well-known firm of Siemens Brothers; but are there no American firms capable of doing equally as well? It might be a good idea for some of them to make a bid in connection with the projected Pacific cables, and then, if our capitalists will patronize home industries, we may have a veritable “American” cable.

Now that we are to have our own cables, we hope that our managers will see that they are worked at both ends, in Europe as well as in America, by American operators. Independently of the fact that better work can thus be obtained, and that provision can in this way be made for many worthy operators, it will be only following the precedent set by the foreign companies, who have always exported their operators to do their signaling on this side.

In a recent issue we advocated a competitive trial of the various systems of electric lighting. It seems now certain that the electric light will, in a few years, entirely supersede gas. In London the question has been put to a practical test by introducing several of the best methods under an arrangement which prolongs the opportunity for comparison throughout an entire year. Which of the many electric light companies now established here will be the first to issue a challenge for a competitive trial?

THE coinage of new words made necessary by the rapid progress of electrical science is at last attracting the attention of, and in some cases protests from, our lexicographers. The word “cablegram” is now under criticism, as it violates the alleged law that a compound derivative word must have all its roots from the same language, and “spartogram” is suggested by the philosophers as a substitute. “Cablegram” is good enough for us.

THE insurance companies are now threatening to rate all buildings using the electric light as “specially hazardous,” unless the insulation of the wires is properly approved. Their fears arise from the danger of fire in case of a cross between the electric light and telephone wires.

WE regret that the cuts to illustrate the exhibit of Messrs. C. E. Jones & Bro. at the telephone convention were not even ready for this issue. These and cuts of the switch exhibited by the Utica Fire Alarm Telegraph Company will, however, appear next issue.

OWING to the pressure both of reading-matter and advertisements, we again present our readers with a 20-page paper.

WESTERN UNION stock is quoted at 118 $\frac{3}{8}$ ; American Union at 85 and A. & P. at 51 $\frac{1}{2}$ .

#### Professor Carhart's Lecture.

The lecture of Professor H. S. Carhart at Cooper Institute, on Thursday evening, May 5, was very fairly attended, and many of the experiments elicited enthusiastic applause. It was not, however, of such a character that a full report of it would be read by any considerable number of OPERATOR readers, while it would be difficult, if not impossible, to illustrate the experiments with newspaper wood cuts. For these reasons we must content ourselves with the following synopsis:

Professor Carhart first explained the difference between the solid, liquid and gaseous states of matter, and then announced the theory of a fourth or ultra-gaseous state. In solids the molecules were held together by cohesion in such a manner as to furnish a powerful resistance to any alteration in the form of the mass; in liquid their evolution or oscillation was so comparatively easy that pressure was transmitted in all directions; in gases the constant collision of molecules with each other was believed to be the source of their pressure against the sides of the vessels in which they were contained. But the free path of the molecule even here was, as compared by Mr. Clerk Maxwell, only one two-hundred-and-sixty-thousandth of an inch, while the distance between any two molecules was only one seven-millionth of an inch according to the same brilliant mathematician. By experiments with high vacua, exhausting the air in tubes to one twenty-millionth of its original density. Prof. Crookes discovered a form of matter in which the molecules were so far removed from each other that their impact could be studied in its purely physical relations—a form so attenuated that the collision of the molecules was reduced to a minimum. The wonderful ingenuity he had shown in visualizing the movements of these infinitesimal bodies, as well as the originality of the conclusions he had arrived at, was one of the remarkable advances of modern science. This new form of matter Prof. Crookes had styled radiant or ultra-gaseous. Prof. Carhart's experimental illustrations of the subject were conducted by passing electrical currents through Geisler and Crookes tubes, the former of low and the latter of high vacua, showing that gases phosphoresce under the action of the current in a manner entirely different from the ultra-gaseous ether forming the fourth state. In the latter, the phosphorescence of the tube under passage of the current was shown to be due to propulsion of streams of particles against the internal surface of the tube, and to be confined to the glass itself, not a property of the contained matter. In the former, on the contrary, the stratification of the contained gases was exhibited, and the light demonstrated to be due to the collision of gaseous particles. By introducing caustic potash into a supplementary tube and heating it with the flame of an alcohol lamp, thus causing it to part with its aqueous vapor. Prof. Carhart slowly transformed ultra-gaseous into gaseous matter, the phosphorescence of the glass under the impact of particles gradually giving way to the stratified luminosity observed in Geisler tubes when the current passes through them. By using a cup-shaped negative pole he concentrated a stream of particles upon a platinum button suspended in a vacuum tube until it was heated to incandescence by invisible means, the bulb remaining perfectly cool. His last experiment was to run an engine in a Crookes tube by means of shifting the poles of the battery rapidly from one of the tubes to the other. “We have now touched the border-land,” remarked Professor Carhart, in conclusion, “where matter and energy pass into each other, and have arrived at the ultimate particles of which the universe is composed—an achievement which will, in the end, I believe, enable us to solve the subtlest problems that science presents to us.”



## Notes from the Oil Regions.

To the Editor of The Operator:

SIR: This is indeed a season of many changes and surprises to the telegraphic fraternity throughout the country, and Oil City, which for a number of years has been an important point, has just realized its full share. The American Union boys for the past month or more have been on nettles, as it were, hourly expecting to be gobbled up by the great monopoly, and even the Western Union force have at times appeared a little uneasy as to the final result, each eagerly and anxiously watching the "little indicator" to see what might be their loss or gain. The surprise was as sudden as it was unexpected. On March 31 we were informed that on and after that date the Western Union Telegraph Office at Oil City would be no more, and that Mr. M. E. Luce, our genial Manager, would quietly step down and out, to be succeeded by Mr. W. A. Drake, Manager of the American Union; that all wires and office furniture would be transferred to the A. U. office. We were also instructed to report for duty at that office the next morning, April 1. Surprise and, in fact, consternation, would not express our feeling at this sudden denouement. It seemed as though a cyclone of no small proportion had struck us. This startling announcement, however, was well founded, and as soon as business would permit the work of removing tables and running wires was begun, which proved an all-night job. It was ably managed, however, under the supervision of Circuit Manager Ross, assisted by linemen Webster, House, Shaw, and others. The Western Union force, as instructed reported for duty at the American Union offices April 1st and were well received by the new Manager, Mr. Drake, who soon found plenty of work for us all.

The appointment of Mr. Drake as manager is a worthy one. Although a young man, Mr. Drake has shown very marked ability as a manager, and there is no doubt but that he will fill the position with perfect satisfaction to all concerned, and add fresh laurels to an already enviable reputation.

Mr. Frank Ross, for the past two years assistant manager of the W. U., has received the appointment of circuit manager, and to have charge of the working force. Frank is well qualified for that position, and will have Mr. S. M. McKee as assistant.

It is a matter of no small regret that Mr. Luce leaves us to return to his "first love," Titusville, where he continues as manager of that office.

The following excerpt from the Oil City *Derick*, of the 7th inst., will give a good idea of the volume of business handled in a day at Oil City:

"The business of the telegraph company yesterday was reported to be larger than on any day in the history of Oil City. As messages on the Exchange frequently run into the thousands, yesterday's business must have been immense. Oil City's telegraph business will rank second to no single office in the State."

The number of messages handled on the day above mentioned was in the neighborhood of six thousand, the Bradford quad alone handling 1,350.

The following comprise the present force, several of whom are well-known telegraphers: Mr. W. A. Drake, manager; Mr. Frank Ross, circuit manager; Mr. S. M. McKee, assistant; Messrs. H. W. Rathbun, E. A. Keene, Jr., J. B. Skelly, P. M. Brigham, E. Jeunett, George Ross, Jr., A. J. Mercer, E. Hatch, C. C. Klumph, J. H. Gross, W. B. Case, operators; Mr. M. Keating is receiving clerk, while Mr. Frank Thompson and his accomplished wife look after the books. The office boys and messengers number nearly a score.

Oil City office is now under the control of Mr. D. O. Wickham, superintendent of the American Union headquarters at Titusville. While we, the old Western Union boys, will miss the kind, fatherly care of our old and much-esteemed superintendent, C. O. Rowe, we are content to know that our new superintendent is an able officer as well as a pleasant gentleman.

Mr. P. W. Brigham, one of our brightest lights, was married to Miss Aggie Vensel, of St. Petersburg, March 16.

OIL CITY, Pa., April 10, 1881.

Q. E.

## Jottings from the L. S. and M. S. Railway.

To the Editor of The Operator:

SIR: This being one of THE railroads of America, and THE OPERATOR being a decided favorite with the operators on this line, I have often wondered why some of our operators, especially those who make pretensions to literary attainments, have not ere this availed themselves of the opportunity which your brilliant sheet offers of rescuing so worthy a portion of the telegraphic fraternity from obscurity.

We have in our ranks a complete variety of telegraphers, from the nervous "plug" up. There are those who (their story for it) have clambered up the lofty summits of the "Rockys" and "Sierras," who have gazed upon the tranquil bosom of the Pacific, who have listened to the loquacious "Dennis" at the "sand lots," who have drank in with bated breath the grandeur of the "Yosemite," and who have—it may have been for their love of out of door exercise, or for reasons best known to themselves—walked from Santa Fe to Buffalo. There are others still who have crossed the Atlantic, and whose footsteps have echoed through the grim dungeons of London, and the classic hills of Rome, and the palaces of Florence; and who, like Mark Twain, have made the ascent of Mont Blanc—in their mind—and whose never-ending loquacity will, in spite of our endeavor to think charitably, suggest the thought that they even now consult the guide-book which is ever peeping from their pocket, when it were better for them to call to memory the decalogue and its divine precepts. Again we have those who are striving for the appellation of "M. D.," while one or two are delving in the intricate avenues of forensic lore, with a determination and energy beautiful and inspiring to behold, and which, no doubt, will eventually place their names high upon the scroll of fame. Why not, if they but emulate the example of some of their distinguished predecessors?

On the whole, it seems to me that among all these erudite gentlemen there ought to be some one spirited enough to write up our affairs in a manner worthy the columns of THE OPERATOR, which would be appreciated by us all. In taking the initial step I do not wish to convey the impression that I am egotistical enough to entertain the idea that my own pen is adequate. I only offer it as a gentle reminder to those well-known for their pedantry.

I append a few personals: Mr. E. H. Abbott, of Silver Creek, is recuperating his tired frame after a long battle with "Ky" and the past winter. Mr. E. P. Clohessy fills the vacancy. Mr. Thomas Cassity has resigned his position as agent and operator at Irving, and Mr. John McCruden, of Angola, has been appointed in his stead. Mr. George Reed, of Cleveland, pays a flying visit to Buffalo occasionally.

EASTERN DIVISION.

HAMBURG, N. Y., March 28, 1881.

## Erie Notes.

To the Editor of The Operator:

Sir: The most elite affair of the season at Pater-son was that of the Telegraphers' reception and ball on the 20th inst. Great credit is due to those who worked so zealously and ably to perfect arrangements and carry out such a truly enjoyable affair. We suggest, however, that the next one be held somewhat earlier in the season. Mr. George Holbrook, Secretary *pro tem.* of the proposed Telegrapher's Society, started for the Hot Springs, Arkansas, Tuesday, the 26th inst. Mr. Holbrook has been in ill-health for some time past, and visits the Springs in the hope that he will be greatly benefited, if not wholly cured. His many friends wish him a pleasant trip, complete recovery and a speedy return. During his absence, all communications relative to the proposed society should continue to be addressed to him at Provost and Tenth streets, Jersey City, where they will receive prompt attention. Any one desiring to meet members of the committee during Mr. Holbrook's absence can always do so by addressing him. Mr. W. H. Owen, mention of whom was made in a previous issue of THE OPERATOR as having accepted a position as train dispatcher with the Cairo & St. Louis Railroad, St. Louis, Mo., has returned to his many friends in the East, the position which he was about to assume not prov-

ing entirely satisfactory to him. He is now Manager of the W. U. city office at Middletown. Mr. W. J. Lipple has resigned his position as Division Operator, and is now with the Pennsylvania Co., this city; Mr. O. F. Gross fills the vacancy. As regards the proposed Telegraphers' Society, the committee express a hope that they will receive more substantial support and encouragement from railroad operators than has already been given them. The committee does not expect lengthy communications from every one. To say that it meets with approval, and promising further support when organizing, is all that is asked. Those who can, and feel so inclined, are requested to express themselves at as great length as they choose, making suggestions. These will decide the course to be pursued when the time is ripe for organization.

As a result of an article in a recent issue of THE OPERATOR, requesting our Superintendent of Telegraph and Division Operators to make a raid upon those offices where students were practicing without the knowledge or consent of those officials, we are glad to be able to state that there has recently been a sweeping out.

We fail to find words with which to fitly express our appreciation of this action on the part of the powers that be. Operators are now and have been for years a glut in the market. Every operator knows this, or, at least, should know it, and it seems strange, in view of this fact, that our superiors in office should be requested now and then to put a stop to any further addition to the ranks. Just what amount of respect it is expected an operator, acquainted with this state of affairs, can have for another who barbers away his prerogatives at the expense of his fellow operators is more than I can comprehend. It does, indeed, seem strange that the necessity for such mention should exist.

ERIE.

JERSEY CITY, N. J., April 27, 1881.

## Boston Notes.

To the Editor of The Operator:

SIR: Mr. Geo. F. Milliken, who resigned his position as manager of the W. U. a few weeks ago is reported to be connected with the telephone company in this city. Mr. D. D. Devereux, city line inspector, has resigned. Mr. J. W. Duxbury, who was Asst. Supt. and district inspector, resigned, and has been appointed Supt. of the Providence Telephone Company at Providence, R. I. Geo. D. Colgrove, Howard M. Breen, Geo. Rideout, Frank Davidson, several in the clerical department, and a few of the line men have resigned.

Mr. Thomas Roche, the newly appointed Superintendent of the Eastern District, *vice* C. F. Wood, has risen from the operating table to his present position through hard and diligent work. He was notably connected with the Atlantic & Pacific Company here, and instituted a stirring competition with the W. U. After the consolidation of that company with the W. U. he was made Superintendent of the American Union, where he continued to discharge the functions of his position in a manner highly satisfactory to the public and general management of that company; consequently his advancement.

Mr. C. W. Henderson is Chief and acting as Manager of main and branch offices. F. Scott Smith, formerly Chief of A. & P., this city, is working New York quad nights. Steve Sullivan and C. J. Sullivan, from the A. & P. and American Union, respectively, are also on the night force. Ed. Holden, from the A. & P., is here on days.

Business is good, and will increase steadily. A large volume of "red" and specials are handled at night. Under the excellent management of Night-Manager Leighton, every man is kept steadily at work. The facilities for handling Western business are now very good, having through circuit to Chicago, which is something new.

The base-ball fever is breaking out in the office. Tom Kelly is growing enthusiastic, as usual, over his pet game, and it is hoped that he will induce some of the others to follow him. It is a well-established fact, particularly known to the New York boys, that we can boast of a tolerably good nine.

UKNO.

BOSTON, Mass., May 11, 1881.



## Chicago Notes.

To the Editor of The Operator:

SIR: Business, telegraphically, continues to boom hereabouts in a way exceedingly lively and entirely unexampled by any previous season's record. Nearly every operator—especially those who are capable, whether able or not—is worked to the utmost of his endurance, night and day; and serious complaints of weariness from overwork are becoming common on every hand. Constant confinement of those who have been located here during the long, dark winter—of about six months—only just fairly ended, has rendered many operators physically unfit for the excessive and enervating tasks now necessarily imposed, and it is believed that by mid-summer, or even earlier, a great number will be compelled to fly from the office for a while in order to regain lost strength and health; and thus put the company to more trying straits than ever.

Your correspondent does not share in the opinion of many that this rush of business is spasmodic and to prove unlasting, but believes it an entirely natural outgrowth, which will continue little abated for a long time to come. The mighty growth and spreading enterprise, commercially and agriculturally, of the limitless West and North and Southwest, insures the belief; and, therefore, the question of increased facilities for meeting the rapidly increasing demand for telegraphic service, should not be a question, but recognized as palpable necessity.

ARRIVALS.—Andy Long, George Richardson (A. & P.); Jim Cooper, Buffalo; Peter Rady and Peter McGill, Toledo; Mr. Swift, Kansas City, and several others whose names we are not able to learn at this writing. First arrival for Mr. Wm. Lowe, a ten pound-boy.

The manager has moved his desk into the operating room, where he can more carefully survey the scene over which he is appointed to preside. Mr. John Boughan, late manager's secretary, has been transferred to the night force.

RESIGNED.—Emmet O'Brien has gone to his home in McGregor, Iowa, to recuperate. Albert Kane has accepted a position upon the Milwaukee & Chicago private line.

## Milwaukee Melange.

To the Editor of The Operator:

SIR: "Make spaces" is the latest adjustment gag.

Nearly every occupation represented in Milwaukee is having trouble with striking employés, except the telegraph companies. Verily, it seems as if the latter should take cognizance of the fact, and voluntarily advance salaries. This suggestion is furnished gratis.

Several quite important changes have been made at 89 Michigan since last issue. Mr. D. A. Henshaw, for many years holding the position of Receiver, has retired, and is succeeded by Mr. T. F. Ramsey, a very worthy recognition of the services rendered by the latter as assistant. The position of assistant receiver is now filled jointly by Mr. Robert Schultz, promoted, and Mr. F. H. Brown, a recent addition. Mr. Henshaw's resignation takes effect on the first of June. Mr. W. F. Moore, of St. Paul, has accepted a position on the Chicago & Milwaukee telegraph force, and is a worthy acquisition. Mr. F. W. McRavey, of the Milwaukee District Telegraph Co., has resigned to accept a railroad position on the St. Paul & Omaha. Mr. B. W. Shove, for the past year employed on the Northwestern day force, has resigned to accept a position on the C., St. P., M. & O. R. R., at Worthington, Minn. His place here is filled by Mr. Looby.

Members of the profession who knew Mr. Jno. F. Gale, will be pained to learn of his death by drowning, as noticed in another column. Mr. Gale had been, until a few days previous to his death, employed by the Chicago & Milwaukee Telegraph Company, this city, and he was considered an expert operator, and had many friends. It is supposed that he took his own life, while laboring under temporary aberration of mind, superinduced by despondency over the loss of his situation and the reported precarious condition of his mother, who had received serious injuries by an accident a short time previous. This is the second Milwaukee telegrapher within a little over a year who has chosen the watery path to "that undiscovered country from whose bourne no traveler returns." Pace. OCTOPUS.

## The A. D. T. and the Mutual District.

To the Editor of The Operator:

SIR: The contest between the Mutual and American District companies for patronage is beginning to assume the form of the ridiculous in certain quarters.

The rival companies have offices next door to each other, between Twenty-second and Twenty-third streets, on Broadway.

Delmonico's, in that vicinity, uses both call boxes when a messenger is wanted.

The calls are very numerous, and in the frantic effort to get there first, Mister Terrell, Manager, and late acting superintendent of the A. D. T. messenger department, stations a boy outside the door of the office with a red lantern, and another boy is to be found perched on the Worth Monument, several yards from the goal.

When the call comes in the red lantern is swung around by the boy at the door; the monumental youth sees the signal and flies.

The Mutuals, it is understood, have organized a system of whistles. They have not yet, however, been able to originate anything half so successful as the red lantern.

Had the A. D. T. Co. shown a quarter of this energy in the past, they would not now have a rival to contend with. How long will such efforts last, and, seriously, is not all such work farcical in the extreme?

What is needed is good constant service, not a spasmodic jump from one extreme to another. The sooner such silly exhibitions are put an end to the better it will be for all concerned.

SOME of the most intelligent managers of the A. D. T. Co. are endeavoring to procure an expression of opinion from their associates as to the advisability of forwarding a petition to the president for a rearrangement of their hours of labor.

The time is opportune, and as they have an undoubtedly strong case, the chances are greatly in their favor. There is one thing they can make up their minds to, however, and that is, that if they remain silent till the company finds out what they want, and then gives it to them voluntarily, they will be first-class mummies before they get it. T. T.

NEW YORK, May 8, 1881.

## Galveston Gleanings.

To the Editor of the Operator:

SIR: It may be of interest to the readers of THE OPERATOR to hear how we are getting along on the "Island." Telegraphically, matters are in very fair shape. We have a good, efficient force, and nothing occurs to mar our pleasures. The writer has worked in many offices, and takes occasion to say that he never had his lot cast among as good hearted, accommodating, and gentlemanly a lot of "boys" before.

Our force now consists, on the day trick, of Messrs. T. M. Skinner, Chief; Judson C. Smith, N. O. duplex; A. Lucas, Dallas and Ft. Worth wire; E. L. Otto, Shreveport and Longview; W. S. Hoskins, San Antonio and Austin, and a large, good-natured man on St. Louis duplex. Night turn, Alex Russell, Chief; T. Pindell, St. Louis duplex; Mr. Moore, night report man; Mr. Church, San Antonio wire; W. D. Howe, Dallas and extra. Mr. Fox does duty at the Cotton Exchange during the day. Our manager, Mr. David Hall, is the right man in the right place. Besides being a thorough man of business and an efficient manager, he endeavors to treat his men with all due courtesy. We are extremely proud of our chiefs, and I can safely say that no more perfect gentleman can be found. They have the deepest regard of all their men, and thus things move along smoothly. Operators are quite plenty in Texas now, for the first time in two years. The railroads all supplied, and quite a number of idle men in the country here. I would not advise any leaving positions to come here unless assured of a place. Salaries are going down all over the State. The "Service Slip" was abolished here to-day. We have had a good pull at it, and we let it go without regret. GALVESTON, Tex., May 1. X.

## Chattanooga (Tenn.) Notes.

To the Editor of The Operator:

SIR: Our present force consists of the following well-known telegraphers, making, as Chattanooga is noted for, one of the best forces in the country: Mr. N. R. Young, Manager; day force; Messrs. Al. Pennock, Chief; Jack Riley, New York duplex; Sam Swartz, New Orleans quad; Homer G. Comstock, Nashville and Atlanta circuits; Charley Skelton, "old man," Memphis single. Night force: John R. Terhune, Chief; Chauncy Raymond, of New York, press Washington circuit; Ralph Saxton, of Pittsburgh, New York duplex; J. W. Burton, late manager A. U. at Atlanta, Ga., "hoops up" southern press nights.

Business has increased 25 per cent. cent since last April, and there won't be any reduction of force this summer, although there may be of salary. We all came here and worked during the epidemic of 1878, and can, therefore, appreciate a cut-down of salaries muchly. The A. U. is still open, with James B. Norris as Manager. Fred Meyer, late of New York, is his assistant.

We expect to move into our new office shortly. E. M. Hickey, who has been in Selma during the fall and winter, is sojourning here now. He expects to go to Mexico soon. Ed. Fullam, of the A. U., Cincinnati, is in the city for a few days. PENN.

## Buffalo (N. Y.) Notes.

To the Editor of The Operator:

SIR: Great changes have been made in telegraphic circles in this city since the close of the A. U. and A. & P. offices. L. M. More, manager A. U., has been transferred to the management of the three companies consolidated at the Dock; A. C. Terry, chief operator, to assistant chief W. U. office. N. H. Perrin (the rusher) is working oil wires; Ed. Abrams and W. H. Stratton, New York wire, days; S. A. Farley, National Press, days; Charley Orr, M. O. Hoffman and Tom Winnett, nights. Messrs. Dennis and Usher, manager and chief operator respectively of the A. & P., are now assistant chiefs in the W. U. office. We now have a force of 71 operators and about 6 or 8 chiefs. The boys on the Associated Press would like to know what they were all doing while Griffin, at Lockport, received those 58 words per minute from Minear. John Agne, of the American Union office, New York, arrived on the 11th inst., and is working the Rochester duplex. Toney Gallagher, of "roaming" fame is with us on the Boston quod. Frank Gardner, who got the Colorado fever about a year ago and left for Pueblo, is again with us. The report is going the rounds that some attraction in the telephone office called him back to Buffalo. Walter Patterson has the South America fever. G.

## Baltimore Notes.

To the Editor of The Operator:

SIR: The outlook for operators just now in Baltimore is certainly not very encouraging. Those thrown out of employment by the recent consolidation are looking anxiously forward to the time when the Mutual Union Company will open up, which, it is said, will be but a few months. A musical and literary entertainment, complimentary to Mr. George F. West, late manager of the A. D. Tel. Co., was given at the Academy of Music April 19. Baltimore's famous elocutionist, Miss Minnie Mosher, read several fine selections. Mr. E. Jungerman, of the W. U., has resigned, and goes to Gettysburg May 1. He was a bright light in the main office. E. H. Cole has accepted a position as operator and agent at Hagerstown, Md. Mr. Walter Stewart, the newly-appointed manager of the A. D. Tel. Co., has resigned on account of ill health and gone South. The duties of his office are performed by the president, Harry Fisher. Mr. E. C. Cockey, a former Baltimorean and now general supply agent of the W. U. Tel. Co. at New York, was in the city yesterday. The Brush Electric Light Company has been incorporated here, for the purpose of lighting the City Hall and other business houses by electricity. EXCELSIOR.

BALTIMORE, Md., April 22, 1881.

## A Decoration Day Suggestion.

To the Editor of The Operator:

SIR: Decoration Day is near at hand. On that day the graves of those who served their



country well will be strewn with flowers, and the statues of men whose memory we love to cherish will be decked with wreaths, as tokens of our remembrance. Would it not be thoughtful and very dutiful in us telegraphers to remember Professor Morse on that day? Subscriptions of ten cents or so from the willing ones would enable us to decorate his statue that we erected in Central Park, and also strew with flowers the grave of the good old man at Greenwood.

G. K. WALCOTT,  
195 Broadway, New York.

May 10, 1881.

P. S.—I have already received several subscriptions, and any others sent to me will be judiciously used for the above object. G. K. W.

## TELEPHONE DEPARTMENT.

Detroit, Mich., has over 900 subscribers to the telephonic service, outside of some scores of private lines.

The Bloomington and Normal (Ill.) telephone exchange has 200 subscribers in Bloomington and Normal, the latter being a place of 2,000 inhabitants, about two miles from Bloomington. Mr. Geo. L. Batchelder is superintendent of the exchange.

The Central Telephone Company has commenced placing poles for a telephone exchange for Streator, Ill., which will connect with two neighboring cities, Ottawa and La Salle. The exchange starts off with 45 subscribers, and new ones are being constantly added.

The Bell Telephone Company, of Canada, have purchased the stock and plant of the Toronto Telephone Dispatch Company. The price paid was \$27,500. Mr. Hugh Neilson, Superintendent of the Dispatch Company, will fill the same position for the Bell Company.

A very interesting experiment with a new molecular telephone, invented by Robert M. Lockwood and his son, William, of New York, was tried recently between New York and Philadelphia, over the ordinary telegraph wires. Conversation, even to a whisper, in Philadelphia was heard with perfect distinctness of articulation. The principle claimed by the inventors is that of molecular disturbance and the suppression of all vibration. A company has been formed to put the new telephone in practical use.

The City Councils of Atlantic City, N. J., have just completed arrangements with the Bell Telephone Company, of Philadelphia, by which the City Hall at that place will be connected with different points in the town, using the telephone for fire and police purposes. A central exchange office will also be located in the tower of the hall, with wires radiating to the principal hotels and cottages, so that in a measure each of those places will also be an alarm station. Atlantic City is the only place along the coast from Maine to Florida possessing this great safeguard and convenience.

The *Evening Telegram* of the 7th instant had the following dispatch from London: "A remarkably interesting experiment has just been made at Calais and Dover, between which places a conversation has been kept up *viva voce* by means of a new kind of telephone, which has been patented under the name of electrophone. Not only were the words whispered into the apparatus at Calais distinctly heard at Dover, and of course vice versa, but the listener at one end was perfectly well able to distinguish by the mere tones of the voice the person who was speaking at the other end.

"The scientific specialists present were astonished at the difficulties successfully overcome in the enormous condensation produced by the metallic covering which protects the cable and in the induction caused by the simultaneous passage of telegraphic dispatches along other wires of the cable. It should be observed that while the human voice was being transmitted through one of the wires, the other wires were being employed for the transmission of ordinary telegraphic messages. Moreover, the experiments were conducted between the hours of ten and four, that is, in the busiest part of the day, when the wires are in unceasing operation.

"There can be no longer any doubt that it is perfectly practicable to converse across or rather under the sea by means of any submarine cable, and the success of the experiment opens up vistas of the possibilities of rapid communication that a few years ago would have belonged to the realms of dreamland alone. The inventor maintains that it is just as easy to talk across the Atlantic as from one room to another, and he has succeeded so well in the first practical illustration of his apparatus that one is scarcely justified in doubting his assertion that he has found out a system by which words spoken from the other side of the ocean can be fixed on their arrival here and treasured up for future use."

The *Free Press*, in speaking of the telephone in Michigan, says that that entire State is managed by one company. No other States are thus managed except Missouri and Wisconsin. Chicago alone has two companies, New York three or four, and all the large cities at least two, while the States are divided into districts with a company for each. At this date Michigan has eighteen telephone exchanges outside of Detroit, and numbers altogether about 2,500 subscribers. This is outside of at least 1,000 private lines. At least 25,000 Wolverines find daily use for the telephone. Two gangs are constantly working on construction.

At a recent meeting of the fire insurance underwriters in this city a report was made of a curious accident to a telephone in a jewelry store in Maiden lane. A telephone is in this store, and the other day, when a man was on the roof running an electric light wire across, it came in contact with the telephone wire, and a flash passed down to the telephone box, melting the annunciator and other metallic parts and burning the box. The shock loosened a considerable extent of plaster. City Electrician Smith said that the shock which demolished the telephone in the jeweler's store must, he thought, have been very powerful, and had any one been at the telephone, he might have been killed; or, if the flame had passed near light goods, there might have been a conflagration.

Referring to the account in this column last issue of a telephone in a church at Carrollton, Ill., the manager of the Holliston, Mass., exchange says that he put a telephone in the Congregational church in that place April 1st, and, in addition to over fifteen subscribers in Holliston, parties sixteen miles distant have listened with pleasure to the music and sermons. The transmitter was at first placed at the right of the pulpit, but afterward changed to directly in front, with better result. The top of the transmitter is just above the bible on the pulpit, so that the speaker's voice strikes it at exactly the right point. It is also arranged so that it can at will be changed to the vestry below.

The Bell Telephone Company of Missouri, whose executive offices are situated at 417 Olive street, St. Louis, has the following officers: H. H. Eldred, President; Geo. F. Durant, Vice-President and General Manager; E. A. Smith, Secretary. The offices are all numbered; 100 office, W. E. Rodgers, Manager, has 9 operators and 415 subscribers; 600 office, John Casey, Manager, 2 operators and 141 subscribers; 900 office, J. Bauer, Manager, 3 operators, 137 subscribers; 1,500 office, W. J. Byrne, Manager, 4 operators, 219 subscribers. The Law system is used with some modification, which, it is claimed, secures greater speed in connecting subscribers. The representative of THE OPERATOR, while in St. Louis recently, tried the system on trunk line connections, making from one instrument five connections in 2 minutes and 45 seconds.

## DASHES HERE AND THERE.

Boston has refused to allow the Fire Department to carry its wires on poles across the Public Garden, and this is believed to be the beginning of official intervention to protect the city against the wire nuisance.

Messrs. L. G. Tillotson & Co., in a full-page advertisement in the present issue, draw attention to the new edition of "Smith's Manual," just published, a copy of which they will send to any address for 30c.

A bill was introduced in the Assembly at Albany, N. Y., May 12, by Mr. Spinola, to tax tele-

graph poles and wires. It requires the companies to make verified returns of the length of wires to the county treasurers and State Comptroller for purposes of taxation.

Messrs. Jerome, Redding & Co. make a change in their advertisement this issue, announcing that in future their well-known and popular "Gem" learners' instruments will be made with brass sounder and key levers, nicely finished and with perfect adjustment for both. The price of the "Gem" will not, however, be advanced.

In Chicago, the Common Council having ordered all telegraph wires to be placed under ground after the 1st of May, the telegraph and telephone companies are at work, night and day, stringing all the wires that can by any possibility be got upon the poles, so that they will not need to stretch any more for the next 200 years.

Messrs. J. H. Bunnell & Co.'s page advertisement in this issue will be found of interest to purchasers of electrical instruments and supplies. Messrs. Bunnell & Co. will soon issue, for free distribution, a new and complete catalogue of the various goods they manufacture and sell.

Western Union business for the month of April has been the heaviest the company has had since it has been in existence. At the present rate of business the company is earning more than 8 per cent. net on the new capital. The reduction of expenses resulting from the consolidation has been something far beyond the expectation of the managers.

The Gas Commission, consisting of Mayor Grace, Comptroller Campbell and Commissioner of Public Works Thompson, has awarded to the Brush Electric Light Company the contract for lighting that portion of the city bounded by Broadway, Fourth avenue, Fourteenth and Thirty-fourth streets, from June 1, 1881, to May 1, 1882, at \$6,783.33. The company has obtained the necessary permit from the Park Department to light Union and Madison squares.

Mr. C. S. Shivler has resigned his position as metropolitan superintendent of the American Union, to accept the general superintendence of the Continental Company. The American Union employes, with whom Mr. Shivler was deservedly popular, made him an appropriate presentation. Mr. Wm. J. Dealy has resigned the management of the American Union main office to succeed Mr. Shivler, and Mr. W. B. Waycott has been appointed acting manager at 135 in Mr. Dealy's place.

The Brush Electric Light Company propose to light Chestnut street, Philadelphia, from the Schuylkill to the Delaware rivers—a distance of 2½ miles—for one year for \$5,000. Before the City Councils of that city it was stated that during the four months the Brush lights have been used in New York they have been out only three times when they should have been lighted, and that was when only one engine was in operation; but now, with three engines running, the lights could only cease for about ten minutes at the most. In Cleveland, where the light had been in operation for a year, it had gone out only once, caused by the cutting of a wire on which some acid had been thrown from a druggist's window.

The Inman steamer *City of Richmond*, eight days from Queenstown, arrived here last Monday with Mr. Bates, the electrician, and his staff, who came over to note the working of the Swan incandescent lights, with which the ship's cabin was illuminated during the voyage. The main saloon was lighted by six lamps, comprising thirty electric jets, and eleven others were distributed at various points on board, making seventeen in all. Some of the state rooms were similarly illuminated.

The light is described by those who observed it during the voyage as very steady and mellow, being wholly destitute of the objectionable violet tinge that seems inseparable from the voltaic arc when carbon electrodes are employed. It was steady, not subject to fluctuation or accident, easily managed, and very brilliant. The six lamps in the main saloon rendered the apartment as light as day, enabling passengers to read at any point. The experiment will be continued on the return voyage at the expense of the inventor, but after that the company will have to make terms if it is to be employed further. The lamp is regarded by English electricians as one of the simplest



and most efficient yet invented, and as successful in an economical point of view by subdividing the current within the glass globe that protects the incandescent bars.

### PERSONAL.

Mr. James P. Golden is with the American Union, at Columbus, O.

Mr. C. W. Potter, late Chief W. U., Repairer, Columbus, O., is at Mitchell, Ind.

Mr. and Mrs. L. G. Tillotson sail for Europe next week, to be gone several months.

Miss M. A. Perkins has been appointed Manager W. U. at Mt. Vernon, O., vice E. C. Janes, resigned.

Mr. B. F. Stone, Manager A. U. office, corner Fifth avenue and Monroe street, Chicago, was married April 27 to Ada R. Day.

Mr. S. N. Cooper, formerly operator in the main office of the C. & N. W. Ry., Chicago, has been transferred to the train dispatcher's office.

We regret to chronicle the death of the eldest son, aged six years, of Superintendent Hugh Neilson, of Toronto, which took place April 29, of diphtheria.

Mr. John W. Duxbury, for many years with the Western Union Telegraph Co., in Boston, has just received the appointment of Superintendent of the Providence, R. I., Telephone Company.

Mr. W. H. Northway, formerly of the Chicago A. & P. office, has gone to Milwaukee, where he takes a position as operator in the main office of the Chicago, Milwaukee & St. Paul Railway.

Messrs. J. O. Dodge and H. K. Morley, of Bloomington, Ill., have invented a new repeater which has been in operation on the C. & A. wires for over a month, and is pronounced superior to the standard W. U. repeater. A patent has been applied for.

Thos. L. Clinton, Manager W. U. office, Rock Island, Ill., has absconded with \$500 of the company's money. He had only held the position of manager for two months, and was formerly night operator for the C., R. I. & P. R. R., in the same city.

A circular issued by the Chicago, St. Paul, Minneapolis & Omaha line states that Mr. H. C. Hope has been appointed Superintendent of the telegraph lines of the N. W. Telegraph Company on the entire road, with headquarters at St. Paul. He will have entire charge of the telegraph service for the telegraph and railroad companies in the territory mentioned, including maintenance, construction, and the general supervision of the operators of the line.

Professor William E. Sawyer, who was convicted in the Court of General Sessions of an assault, with intent to do bodily harm, committed upon Dr. Steele, was before Judge Donohue, in Supreme Court Chambers, on the 6th inst., on a writ of habeas corpus, for the purpose of having him admitted to bail pending an appeal. The exceptions having been filed, and the certificate of Judge Gildersleeve having been obtained, Judge Donohue fixed the bail at \$2,500, which was given.

Master Arcine Alton, aged 12 years, is a telegraph messenger in New Orleans. He recently found on the street a package containing negotiable bonds to the amount of \$14,000, and turned them over to a lawyer, receiving for his honesty 50 cents. A detective then stepped in and was paid seven hundred dollars for having the bonds returned to the real owner, while the honest telegraph boy has to be content with his reward of half a dollar.

Mr. C. J. Sheehan, the newly-appointed manager of the Providence, R. I., W. U. office, has been sixteen years in the telegraph business, and has filled every position from messenger boy to manager. He was formerly a newspaper compositor, then went into the employ of the old People's Telegraph line, from there to the Franklin, then to the management of the Atlantic & Pacific; was next appointed manager of the American Union, and now of the Western Union.

**WABASH APPOINTMENTS.**—The *Railroader* gives the following list of Wabash appointments: To the position of agent and operator: Messrs. H. S. Shapley, at Springfield shops; W. N. Ferguson, at Okalona, Ill.; C. Ross, ditto; L. A. Cloyd, at Roan, Ind.; T. A. Wesley, at

Emerald, Ohio, and D. B. Kirtland, at Mansfield, Ill. To be night operators: Messrs. Eugene Watrous, at Fairmont, Ill.; William Talkwell, at Ivesdale, and John Martin, at Decatur, Ill.

Our representative, Mr. Calder, desires to thank the following gentlemen for courtesies extended during his recent visit to St. Louis: Supt. L. C. Baker, Manager Brown, Chiefs Cummings and Topliff, and Messrs. T. P. Wheeler and W. H. Stanton of the W. U. Telegraph Company; Messrs. G. F. Durant, L. M. Fishback and W. W. Murray of the Bell Telephone Company, and M. K. McKenzie, Supt. Telegraph St. Louis & I. M. R. R.; also the following on the C. & A. Ry.: Messrs. W. K. Morley, Supt. Telegraph; C. M. Payn, Chief Dispatcher; J. M. Flynn, C. B. Cumpston, L. H. Thomas, Mat. Steele, Train-dispatchers, and H. K. Morley, J. A. Carter and M. F. White, operators.

**MONROE, MICH.**—Mr. Wilson has been promoted from night to day operator at C. S. Junction, vice A. B. Clark, who has been appointed train dispatcher at Slocum Junction, vice Wm. Tomkins, resigned. Mr. Tomkins has accepted a similar position with the C., M. & St. P. R. R. in Chicago. In him the T., C. S. & D. Railway loses one of its best operators, and probably as fine a train dispatcher as ever touched key. The boys were all sorry to see him go, but wish him success. Wes Lowry is back at his old stand as night operator in the Union Depot at Alexis. Miss May Quant is working nights at Monroe. Operator Fanning, of the repeating office at Grosse Isle, is on the sick list. Operator Stone, from the transfer-house, fills his place.—*Rail-roader*.

Mr. H. C. Bradford, who has been Manager of the Western Union and its predecessors in Providence, R. I., for 27 years; Mr. A. C. White, who has been chief operator for a long time, and Mr. A. L. Suesman who has been in the same office more than 17 years, have resigned. Mr. Bradford's future intentions are unknown. Mr. White has been appointed electrician-in-chief of the Providence Telephone Exchange. Mr. Suesman has for many years conducted an extensive business in newspaper advertising, and possibly may devote his whole time to it in the future. Mr. Bradford has been succeeded by Mr. C. J. Sheehan, late manager of the American Union, and Mr. White by Mr. J. P. Hurlburt, an old and valued employé of the Western Union. Both gentlemen are capably fitted for the places to which they have been appointed.

**GRAND RAPIDS, MICH.**—The many friends of Mr. John J. Deem, for a number of years train dispatcher of the Northern Division G. P. & I. R. R. Co., will be surprised to learn that he has resigned his position, and at present is touring. We hope to see him back at "D. S." again soon. His successor is Mr. Will Fitz Gerald, formerly Manager G. R. & I. and A. & P. offices. Mr. F. is a practical, clear-headed telegrapher, and will make an efficient officer at his new post. Mr. Mehan, chief operator, assumes the managership in the city office, and is assisted by Mr. Hann and Mr. Ed. Liddy, from Cedar Springs. Mr. W. M. Carpenter, Jr., and Miss Ada Cobb were quietly married April 19. Mr. C. is now in the Treasury Department, G. R. & I., but has made his dots and dashes in the past. Nothing new with the Western Union Company; business is good; no changes. Parties here have been experimenting with the Brush electric light, and it is probable that our principal streets will be lighted by that means in the course of ten or fifteen days.

### MARRIED.

**THOMPSON—SEWARD.**—April 27, at the residence of the bride's sister, Florida, N. Y., by the Rev. Dr. Seward, Mr. Chas. S. Thompson, Superintendent A. D. T. Co., Brooklyn, N. Y., to Miss Carrie J. Seward.

**DOWNES—WENTWORTH.**—At Haverhill, Mass., May 8, Mr. Frank Downes, Manager Mutual Union Telegraph Company, Oneco, Conn., to Miss Susie Wentworth, of Haverhill.

### DIED.

**GALE.**—May, 2, 1881, in Milwaukee, Wis., John F. Gale, operator Chicago & Milwaukee Telegraph Company, aged 29 years.

**WESTERN ELECTRIC MANUFACTURING CO.**

**CHICAGO AND NEW YORK.**

**Telegraph and Telephone Apparatus and Supplies.**

**THE BEST OF EVERYTHING AT BOTTOM PRICES.**

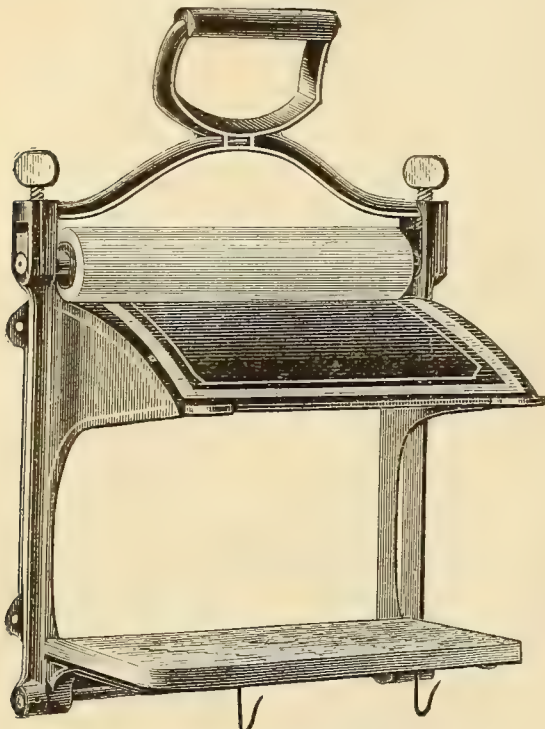
220--232 KINZIE STREET, CHICAGO.

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THE CRESCENT PRESS,  
FOR  
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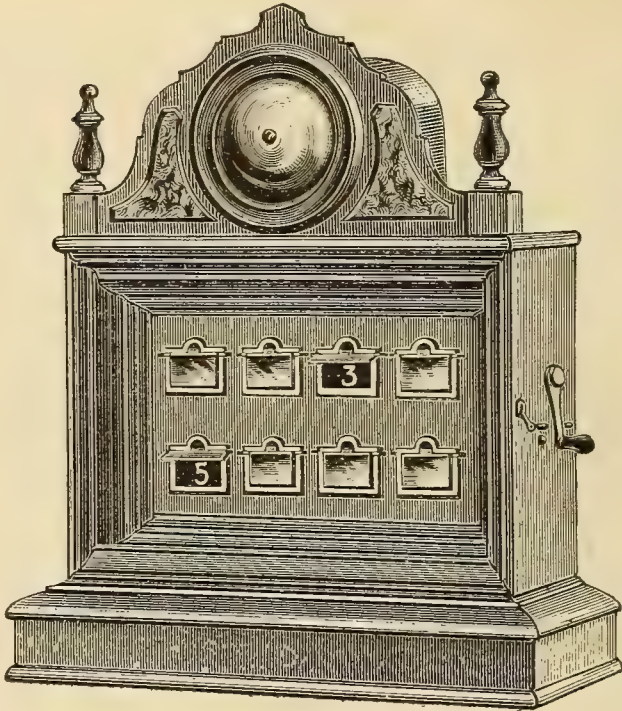
BEST ELECTRICAL ANNUNCIATORS.  
LONG BRANCH PATTERN.



PATENTED SEPT. 21, 1881.

**J. H. BUNNELL & CO.,**  
SOLE MANUFACTURERS AND AGENTS,  
No. 112 Liberty Street, - - - - - New York.  
An improved substitute for the "wringers" generally in use for this purpose.  
**MAKES A BEAUTIFULLY CLEAN AND PERFECT COPY IN AN INSTANT.**

Does not require a table or special supports and fastenings. Can be screwed to the wall in any convenient place, and occupies but about one-fourth the space necessary for the crank machine. It is ornamental in appearance, and is much better suited to the other surroundings in a well-equipped telegraph office than the laundry apparatus which has been generally used for message copying.  
**PRICE, \$7.50.**



**For Hotel, House, and Burglar Alarm Systems.**  
IN HANDSOME CASES WITH NICKEL-PLATED DROPS.

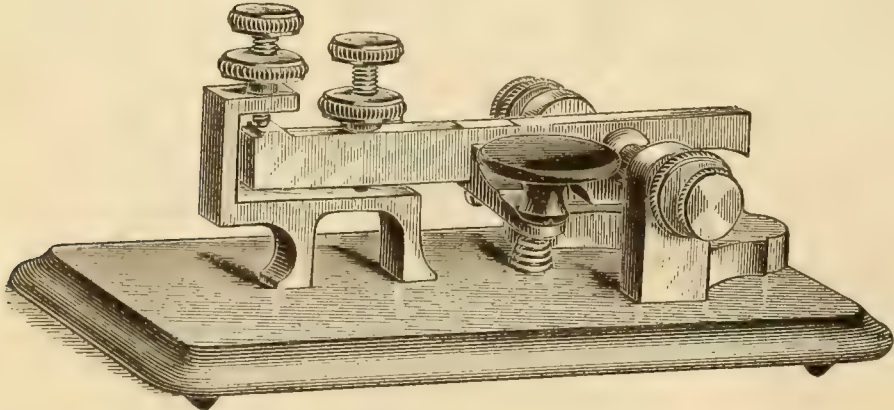
Prices:	
HOTEL AND HOUSE ANNUNCIATORS—	
For 4 rooms.....	\$20.00
6 " .....	26.00
8 " .....	32.00
10 " .....	38.00
BURGLAR ALARM ANNUNCIATORS—	
For 4 rooms.....	\$30.00
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Over 10 drops, \$2.50 for each additional drop.	
Special prices made on large Annunciators.	
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SEND TO US AND GET LOWEST PRICES FOR THE  
**BEST TELEGRAPH INSTRUMENTS, BATTERIES AND LINE SUPPLIES, CALL BELLS, ANNUNCIATORS,**  
**TELEPHONE SUPPLIES AND ALL ELECTRICAL GOODS.**  
FAVORABLE ARRANGEMENTS MADE WITH AGENTS EVERYWHERE.

NEW MECHANICAL

# Telegraph Instrument.

PATENT APPLIED FOR.

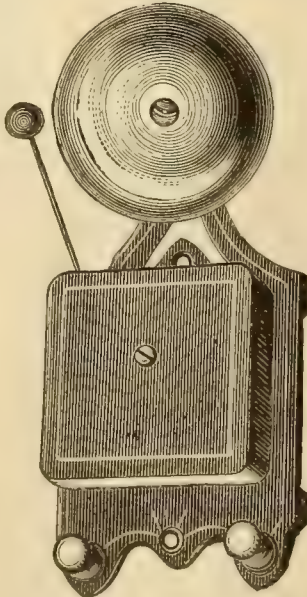


**Combined Key and Sounder—No Battery Required.**

Works perfectly as a Key, with sound equal to the best Sounder. For Morse Alphabet Practice in sending and reading by sound, and for Teaching the Morse Alphabet. Can be carried in the pocket or small satchel, and is always ready for use. Price, with Instruction Pamphlet, package of Morse Alphabet Cards, etc., \$1.50. Sent anywhere in the United States by mail, prepaid, on receipt of price in stamps, or money order, or registered letter.

OUR NEW NICKEL-PLATED AND ENAMELED

# Iron Box Bell.



Strong and reliable, more handsome in appearance than the ordinary box bell. Has pivot bearings for armature, and, all parts being of metal, its working parts are not subject to the changes to which wooden box bells are liable.

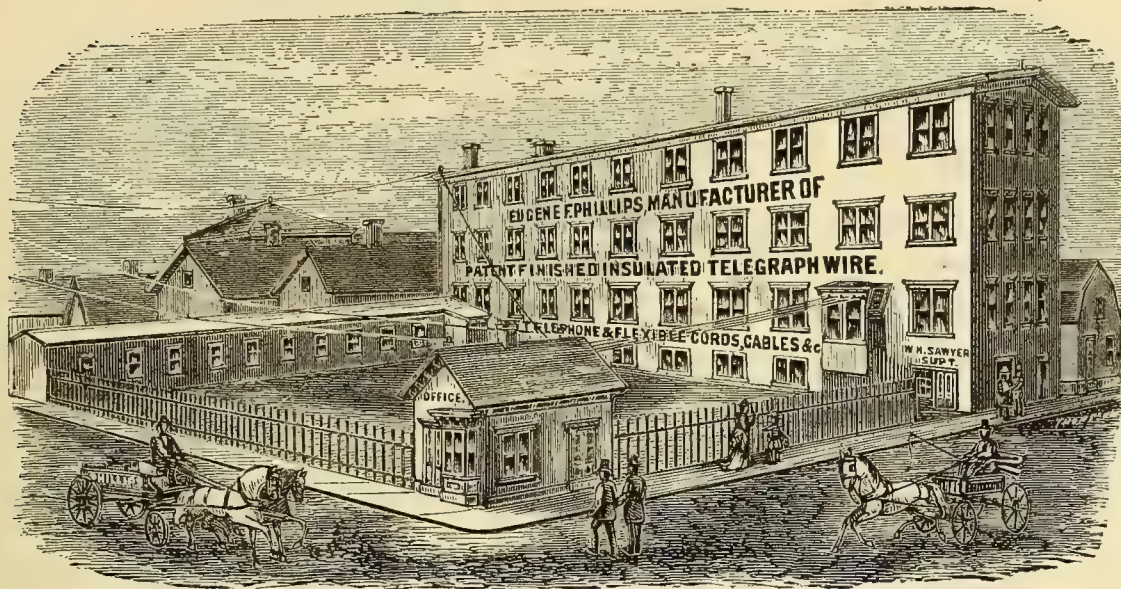
**PRICE, \$2.00.**

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## PROVIDENCE, R. I.



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# Insulated Telegraph Wire,

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### MAGNET WIRE,

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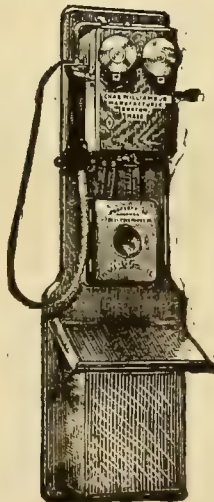
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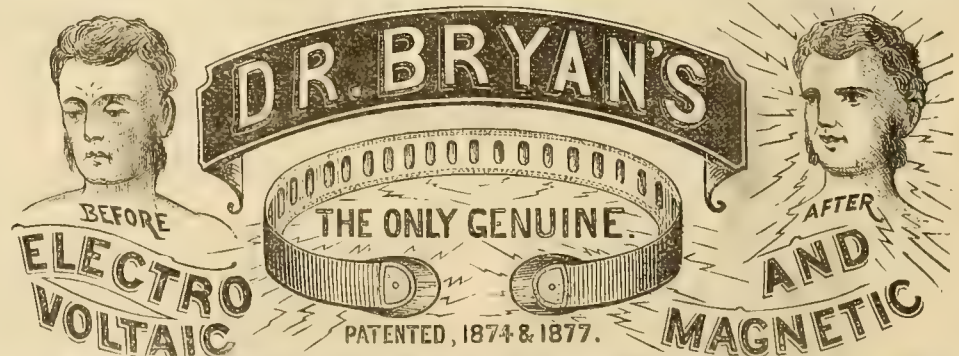
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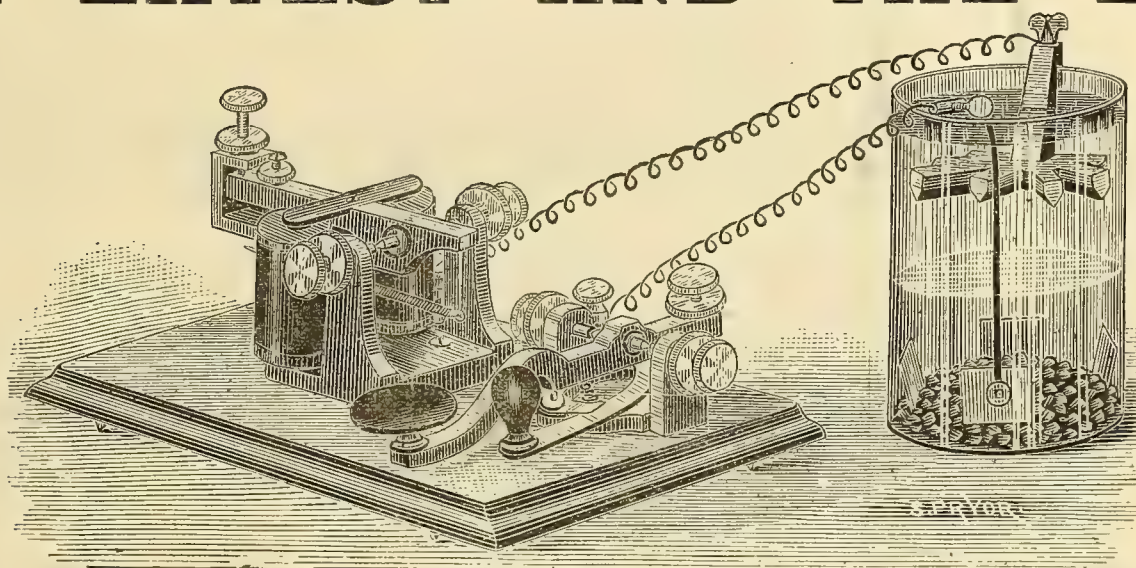
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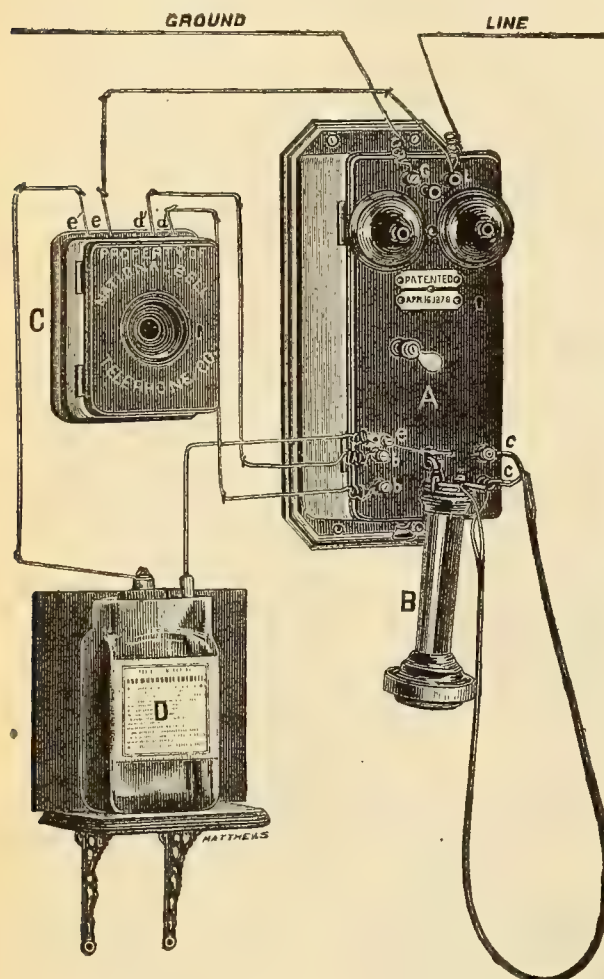
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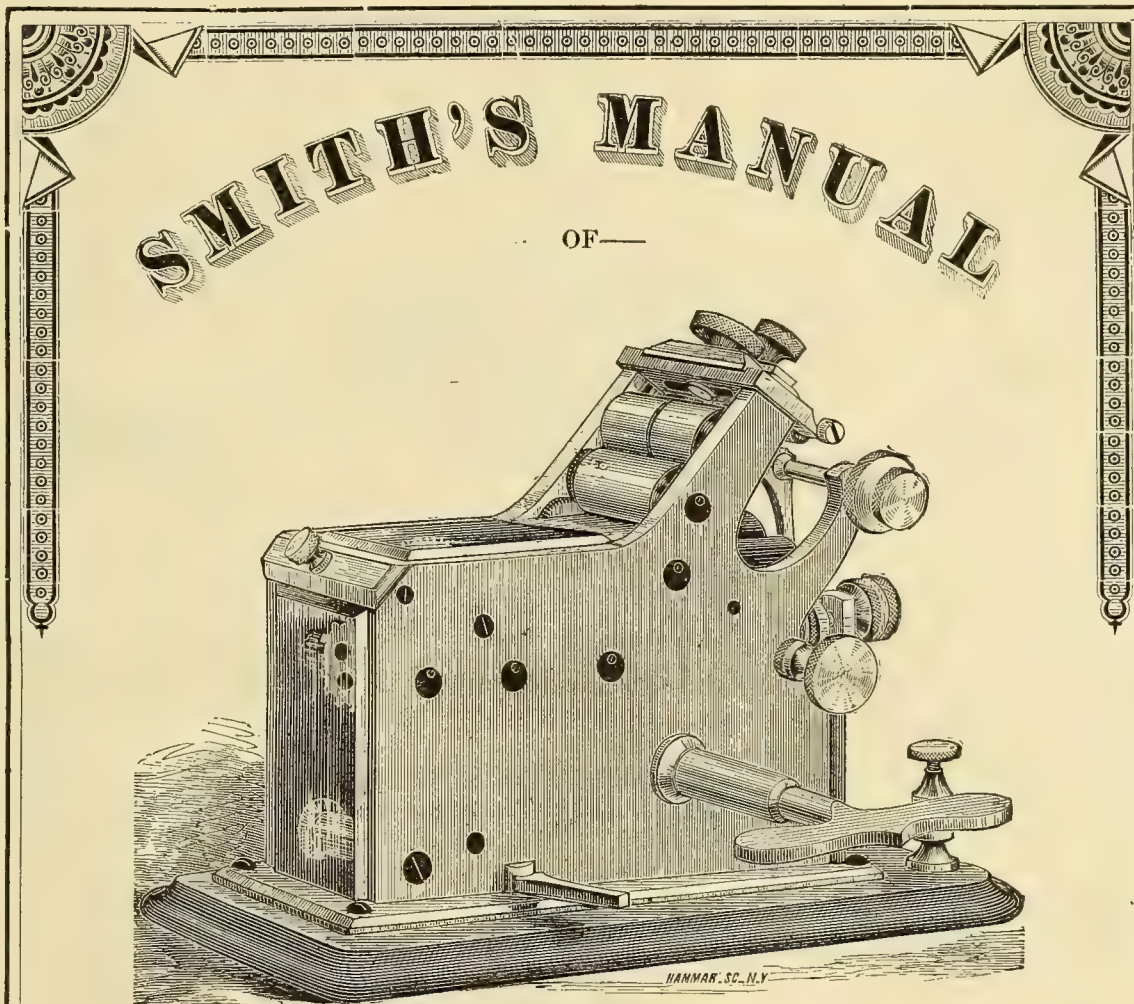
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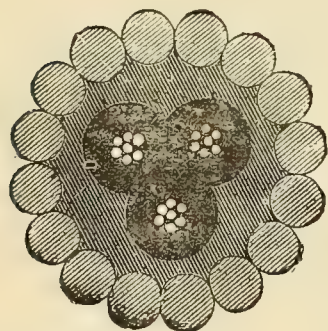
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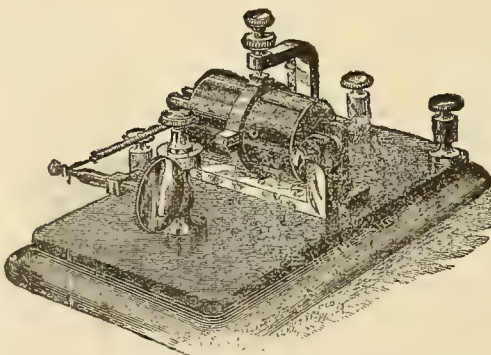
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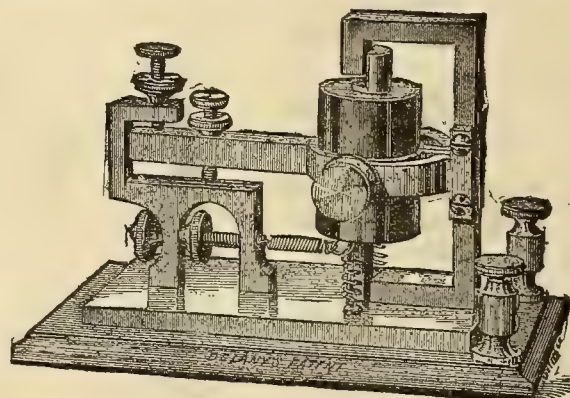
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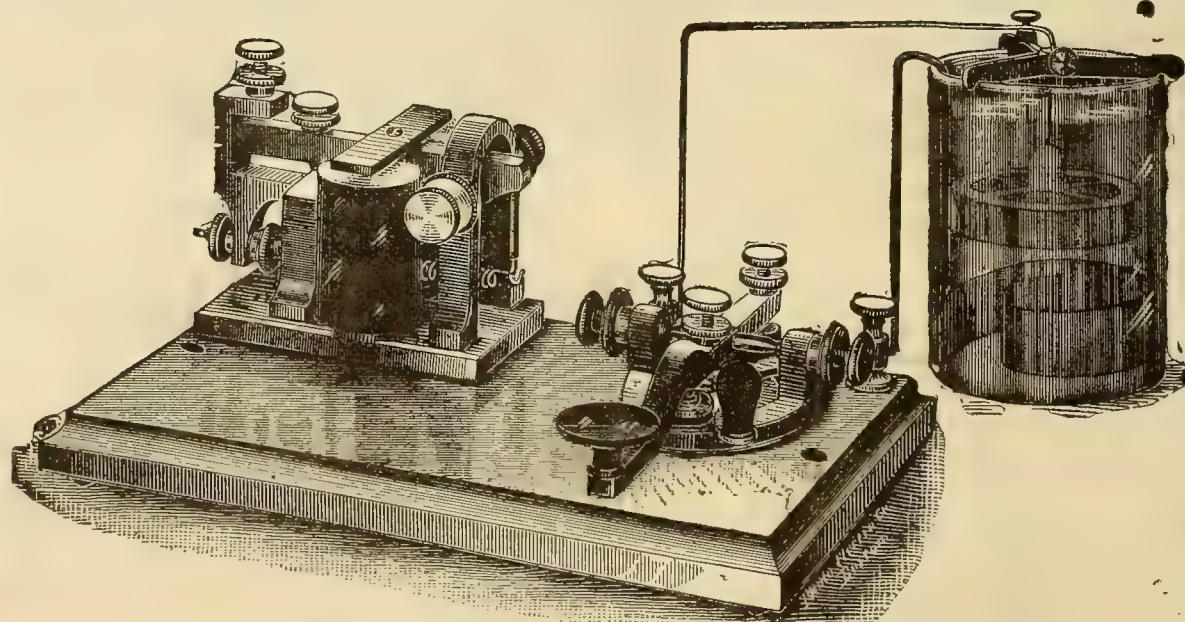
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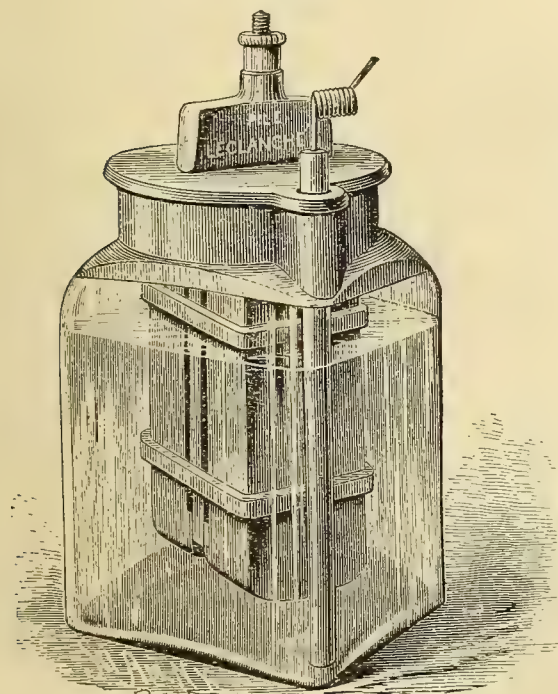
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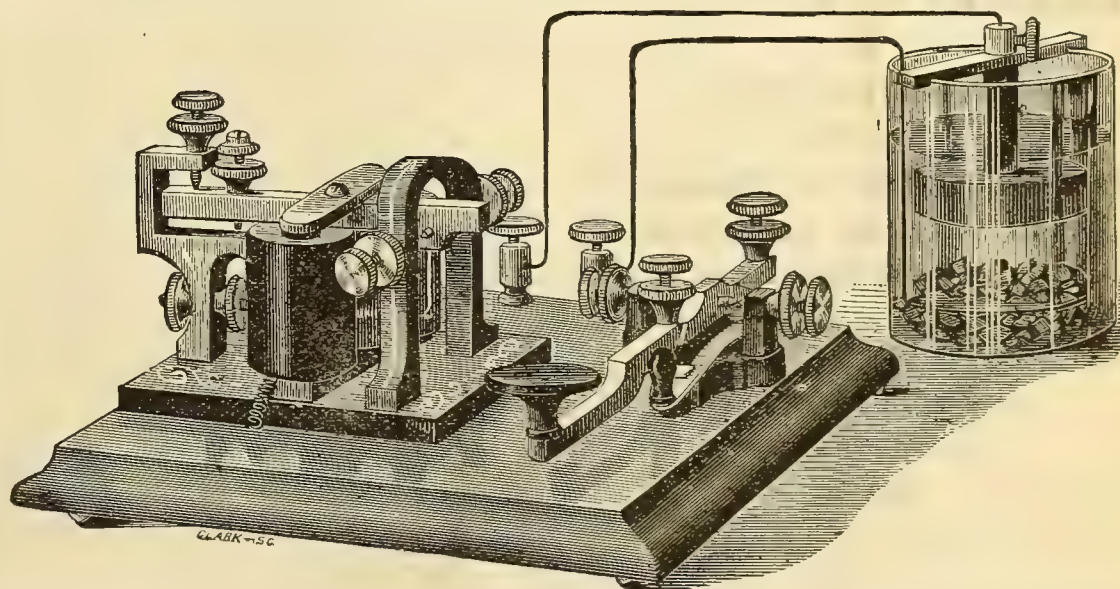
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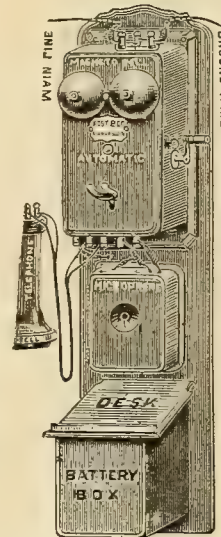
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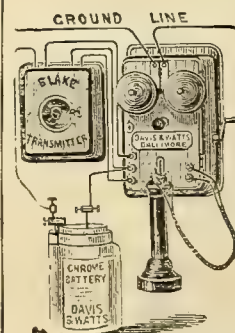
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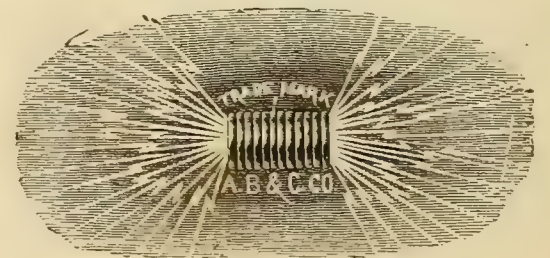
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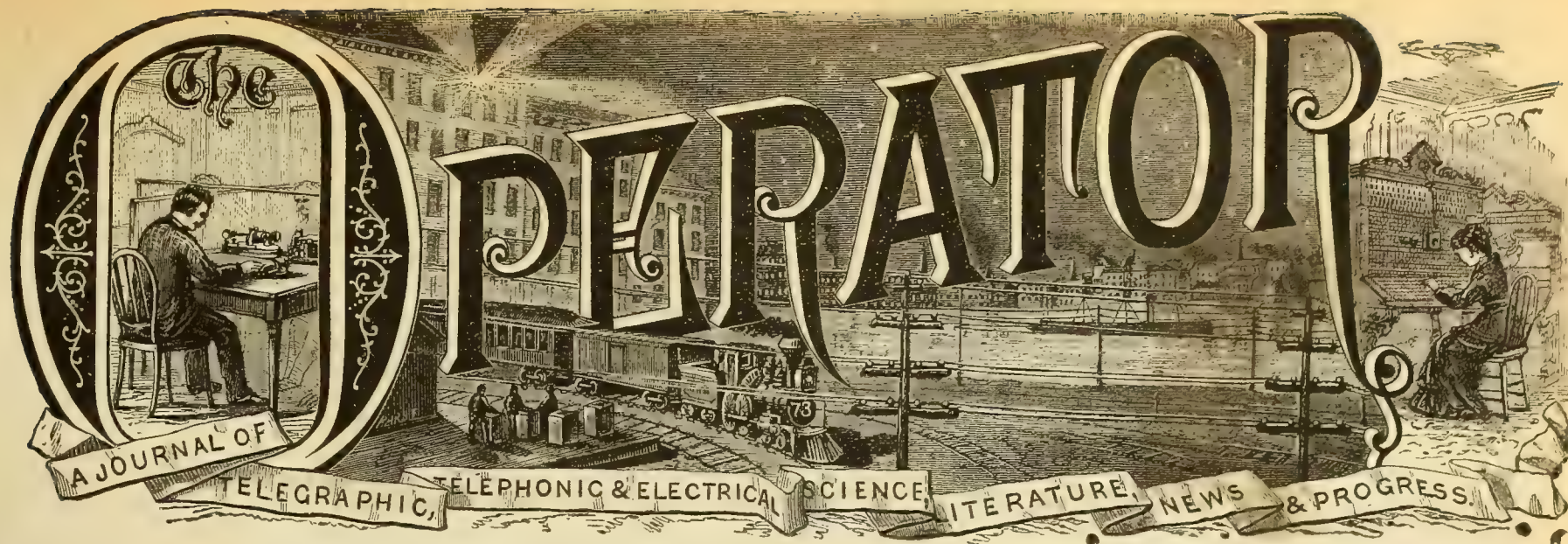
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VOL. XII.—No. 11.

NEW YORK, JUNE 1, 1881.

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DAVID H. BATES,

*Assistant General Manager Western Union Telegraph Company.*



## David Homer Bates.

We present to our readers to-day one of the most successful, and at the same time one of the youngest and most popular, among the executive officers of the consolidated companies.

David H. Bates was born at Steubenville, Ohio, in the year 1843, and entered the service of the Pennsylvania Railroad in 1859—his first office being at the outer depot, Pittsburgh, which was destroyed by the rioters in July, 1877. Although he was then only sixteen years of age, it soon became evident to those about him that he had commenced life on the sound principle that it is better to wear out than to rust out. The clear insight and intense earnestness of purpose which have since led him onward to success, soon attracted attention, and in 1860, after a year's service at Pittsburgh, young Bates was transferred to the General Superintendent's office at Altoona, Penna.

In the following year (April, 1861), when the national flag was fired upon at Fort Sumter, new and wider fields were opened to him. The reverberations from that first cannon shot were felt throughout the North, from the Atlantic to the Pacific. Its rumblings were heard far up among the mountains of Pennsylvania, and patriotism there, as elsewhere, was quickened into stirring activity.

As the gallant troops from the Keystone State were marshaled for the impending war, it was found that transportation by railroad had become a question of the utmost importance. The Secretary of War, Hon. Simon Cameron, at once selected Thomas A. Scott, then Vice-President and subsequently President of the Pennsylvania Railroad Company, to act as General Manager of the United States Military Railroads and Telegraphs. Not being satisfied with the operators employed in Washington and vicinity, and naturally desiring to have about him only such men as he knew and could implicitly trust, Mr. Scott, on the 25th of April, 1861, sent for a staff of operators from his own lines, and accordingly the following named persons were directed to report at Washington: David Strouse (who died at Mexico, Pa., October, 1861), Richard O'Brien, D. H. Bates and Samuel M. Brown.

Being ordered to report at Washington, and reporting there were, however, two very different things in those lively times, but the youthful spirit of Mr. Bates—then only eighteen years of age—and the zeal of his fellow operators knew no such word as fail; as, indeed, subsequent events have fully demonstrated. At Perryville, Md., they found that the Confederates had destroyed the bridges at the Bush and Gunpowder rivers. The intrepid young telegraphers secured passage on the steamer *Maryland*, and arrived next day at Annapolis, where they reported to Gen. B. F. Butler, commanding. Brown was retained for duty at Annapolis, and the remainder of the party proceeded next day for Washington, arriving there about the 27th of April. Fresh impediments arose, the Confederates had destroyed the B. & O. Railroad bridge at Relay House, Md., and some culverts and small bridges between Annapolis and Washington, but the undaunted young men worked on, and finally reached the Capital. They were at once assigned to duty as follows: O'Brien to the B. & O. R. R. depot; Bates to the Navy Yard; and Strouse to act as Superintendent of the U. S. Military Telegraph. Soon after his arrival here young Bates was tendered a position

as first lieutenant in the regular army, which, with characteristic modesty, he declined.

The small body of earnest and efficient workers named above formed the nucleus of the "United States Military Telegraph," which afterward grew to such large proportions, and exercised so great an influence upon the conduct of the war and the destinies of the country. Indeed, it is not too much to say, that without this important adjunct of the service the war could not have been brought to so brilliant a termination. The efficiency of their service was amply testified to by Lieutenant General Winfield Scott and his successors in command. A better natured, more intelligent or harder-working set of men than the members of the Telegraphic Corps never laid hands upon a key. Sometimes quartered in a barn; again with only the sky above them, with the stump of a tree for an instrument table, they were found far out on the picket lines, heralding the first approach of the enemy, and always keeping the commanding general in instantaneous communication with his most advanced forces; sometimes called upon to do twenty-four hours' duty in a day, and always working without a murmur.

When Gen. Sherman received his orders to march "from Atlanta to the Sea," they were sent by telegraph, and the wires were immediately cut so that no further communication could be had. The next heard of Sherman was his report from the seacoast, and in the meantime the secrets had been religiously kept by the authorities and their trusted operators. Again, when, after the cessation of hostilities, communication was restored with Richmond, all wires passed through the War Department, where copies were taken of all dispatches for the South; the censorship of the press was still in force; everything depended upon the secrecy of the plans of the Administration, and in this, too, these faithful telegraphers remained true to their trust.

But, to return to our narrative: As the necessities of the War Department increased, operators flocked to Washington, fresh men arriving there daily, and the "U. S. M. T." grew until it might almost have been called a small army of itself. These new-comers were invariably assigned to a week's duty in the War Department ("Di") as a crucial test of their ability, and in this way Mr. Bates became personally acquainted with nearly the entire military telegraphic corps—a circumstance which may, in one sense, account for his wide popularity.

Mr. Bates remained two weeks at the Navy Yard—weeks then were as years now, so quickly did important events follow each other—winning the personal esteem of Admiral Dahlgren, who was in command, and was then transferred to the War Department office. The first office there was in a room adjoining that of the Secretary of War; but, so rapid was the increase of telegraphic business, the quarters were removed three or four times within one month. The telegraph office finally brought up (at least, it remained for two months) at the head of the stairs—a place which has since become historical. It was in this little box-space that the news of the terrible defeat at Bull Run, in August, 1861, was received. Col. Scott, with his customary foresight, had previously arranged for mounted couriers, to and fro, between Fairfax, the furthest telegraph office, and the battle-ground, and it was here, in this inclosure at the head of the stairs in the War Department, that President Lincoln, Gen. Winfield Scott, Secretary Cameron, Secretary Seward, and other Cab-

inet officers, were seated, awaiting news from the front.

During the succeeding memorable events, Mr. Bates was not idle, for he seems to have mastered all the knotty problems, instead of allowing them to master him. One of the duties to which he was assigned was in connection with the "cipher department," every telegram of importance between the government and the army in the field being put in cipher, to prevent publicity. In this way projected movements of the greatest moment were generally known to the War Department cipher men on both sides far in advance of all others except the originators.

As an example of this kind of service, and the tact required on the part of the operators, we may mention the following case: In the fall of 1863, the *Tacony*, which had been captured by the Confederates, was cruising along the Atlantic coast, destroying smaller craft and creating consternation generally among the population of the seacoast cities. It was apprehended that, with the co-operation of Confederate agents in this city, an attempt would be made to seize some of our ocean steamers, and so capture freight and merchandise which was then so greatly needed in the South. Alexander Keith was believed to be the Confederate agent in Halifax, N. S., and through him it was understood that the Confederate Government communicated between Richmond and the northern portion of the United States, via Nassau, N. P. A cipher letter addressed to Keith was seized in December, 1863, and sent to Secretary Stanton, who put it in the hands of his trusted clerks, to be deciphered, but it was not until a week had elapsed that it fell into the hands of General (then Major) Eckert. This consummate electrician and tactician sent at once for Bates, Tinker and Chandler, who quickly translated the cipher. It proved to be of the utmost importance. Two days later a second letter to the same party was seized, and it, too, was easily read. From both these letters it was learned that Christmas Day (two days only after the last letter was seized) had been fixed for the shipment of Confederate bonds, notes, printing presses, etc., and the seizure of an outgoing ocean steamer after clearing from this port.

Acting upon the translation rendered by Mr. Bates and his fellow operators, Mr. Charles A. Dana, then Assistant Secretary of War and now editor of the *New York Sun*, started by the first train from Washington for this city to consult with Gen. Dix, and on the 24th of December he was able to telegraph to Secretary Stanton that all the principals engaged in the plot had been arrested, and that millions of dollars worth of Confederate bonds and notes, together with the presses, plates and paper in large quantities, had been seized. Had this plot not been frustrated—and it never would have been had not Mr. Bates and other telegraphers displayed their wonderful powers of discernment—and if the Confederate agents had succeeded in seizing the outgoing steamer, as planned, it is believed that the privateer *Tacony* would have been reinforced by other vessels, and that, perhaps, one or more Northern cities would have been burned; and, possibly, the tide of war turned in favor of the Confederates, whose prestige upon the seas at that time was increasing.

There is an interesting sequel to this story, not essential to the record, but valuable as a lesson in showing that the way of the transgressor is hard. Keith, the Confederate agent at Halifax, of whom we have just now spoken, disappeared



soon after the disclosures following the translation of his cipher letters and the frustration of his plans, and it was not until long after the war had ended that his whereabouts was discovered. It was then learned that he and Thomassen, the nitro-glycerine fiend, who shot himself on learning of the premature blowing up by one of his own infernal machines of the steamship *Mosel*, at Bremerhaven, were one and the same person.

It may be interesting to readers of *THE OPERATOR* to mention the nature of these captured "ciphers" which were frequently tossed over to Mr. Bates and his associates to translate. The following sentence is the date of a message from Gen. Joe. Johnston to Lieutenant General Pemberton, which was extracted from the coat collar of a scout taken at Walnut Hills, on the 30th June, 1863: "Lyemg-gl Ogug Lspe Vfg 47 Vf, 3681." The key to this cipher was found by taking, instead of the letter written, the third preceding or following it, in the order of the alphabet. Thus, L, the first letter in our example, meant "J" (the third letter preceding L); the Y meant "A" (the third succeeding Y); the E meant "C" (the third preceding E), and so on, the entire translation of the sentence being: "Jackson, Miss., June 30th, 1863."

Toward the close of the war Mr. Bates was offered the tempting position of Superintendent of Telegraph for the Pennsylvania Railroad, to succeed David McCargo, but declined it, preferring to remain in the service of the Government.

On the night of the assassination of President Lincoln, April 14, 1865, Mr. Bates was on duty at the War Department. Once again all the telegraph wires, with one exception, were cut, and once again the most reliable telegraphers were called upon to perform the most delicate and trustworthy duties. It was Mr. Bates himself who transmitted to New York, Philadelphia and Baltimore, the bulletins prepared by Hon. Edwin M. Stanton, at the bedside of the dying President, addressed to General Dix, at New York, and by him sent to the various newspapers throughout the country.

In this year, 1865, Mr. Bates was appointed Assistant Manager of the U. S. M. T., Department of the Potomac, and, in the following year, the cipher operators were formally thanked for their eminent services in a circular, of which the following is a copy:

OFFICE U. S. MILITARY TELEGRAPH, }  
WAR DEPARTMENT, }  
WASHINGTON, July 31, 1866. }

D. H. Bates, Assistant Manager, Department of the Potomac; Charles A. Tinker, Chief Operator, War Department; Albert B. Chandler, Cipher and Disbursing Clerk, War Department; A. H. Caldwell, Chief Operator, Army of the Potomac; Dennis Doren, Supt. of Construction, Department of the Potomac; Frank Stewart, Cipher Clerk, War Department; George W. Baldwin, Cipher Clerk, War Department; Richard O'Brien, Chief Operator, Department of North Carolina; George D. Sheldon, Chief Operator, Fortress Monroe; M. V. B. Buell, Chief Operator, Delaware & Eastern Shore Line, John H. Emerick, Chief Operator, Army of the James.

GENTLEMEN: I have been instructed by the Secretary of War to present to each of you one of the silver watches which were purchased and used to establish uniform time in the Army of the Potomac, marked "U. S. Military Telegraph," as an acknowledgment of the meritorious and valuable services you have rendered to the Government during the war, while under my direction, as an employé of the United States Military Telegraph.

It gives me great pleasure to comply with these instructions, and I will take this occasion to thank you, for myself, for your faithful performance of the important trusts which have been confided to you in the various capacities in

which you have served, and especially as "Cipher Operators."

Yours, very truly,  
THOS. T. ECKERT,  
Asst. Secretary of War  
and Supt. U. S. Military Telegraph.

After the consolidation of the old American, Western Union and United States Telegraph companies, in 1866, Mr. Bates was made manager of the general office in Washington, D. C.

In the following year (1867) he was appointed Superintendent of the Western Union Eighth, now the Sixth District, with headquarters at Philadelphia. As this is one of the most important districts in the country, extending from the vicinity of New York to Washington and from the Atlantic seaboard to the western border counties of Pennsylvania, the appointment of a young man, barely twenty-four years of age, to its superintendency was the best illustration of his tried fidelity and ability. The result fully justified the appointment. The youthful superintendent had here the first favorable opportunity to show fully the diversity and wide range of his natural executive ability.

The work of reorganizing the service was a task which even an older man might have shrunk from, but Mr. Bates went at it methodically and resolutely, and in a brief period everything was subject to his judicious and vigilant superintendence. His natural kindness of heart was no less noticeable than his firmness and determination, while his perfect courtesy rivalled his strict impartiality. A kinder eye never beamed on the faithful worker, but a heavier arm never fell upon the wrong-doer. Indeed his whole official life has exemplified the keenness and strength of that famed Toledo blade, which, while it could cleave an iron bar, would cut a silken scarf if drawn through its folds.

His eight years in Philadelphia left an enduring impression upon those who were associated with him, and which took palpable shape in the costly and beautiful testimonial tendered to him by the operators on the day he parted with them. High commendations from his superior officers and the press were so frequently bestowed that it would be unfair to specify, although we ought to mention Mr. Bates' masterly arrangement of wires, and splendid telegraphic service during the sessions of the Republican National Convention in Philadelphia, in 1872.

In 1875 Mr. Bates became General Superintendent of the Atlantic Division of the Atlantic & Pacific Telegraph Company, a position which he resigned, in 1879, to accept the Presidency of the late American Union Telegraph Company. This was Mr. Bates' crowning work, and we have always to regret, and perhaps occasionally to condemn, the strange circumstances which led to its abandonment. Never was a telegraphic enterprise commenced under more auspicious circumstances, or carried through in as brief a time to complete success. Commencing virtually in January, 1880, with a few but select workers, it ended abruptly, in less than one year thereafter, by monopolizing all that is original in thought, fresh in spirit, quick in action, and successful in everything. It worked with the regularity of a machine from the first, and every appointment justified itself and proved the keen discernment of Mr. Bates in the judicious selection of able lieutenants. There were chiefs alert, eloquent, courteous and glowing with energy; there were wide-awake local chiefs and operators, clerks and messengers—in fact, all that was enterprising and conquering in the telegraphic world—with Mr. Bates himself, ripe in judgment and

ability, above all, exercising his authority imperatively, but with such gentle pressure as to be scarcely felt.

Subsequent events must be fresh in the minds of our readers, so that Mr. Bates' record as First Vice-President of the American Union (after Gen. Eckert assumed the Presidency) and, later, his being called to his present position of Assistant to the General Manager of the Western Union, need not be recounted.

Like his great chief, Gen. Eckert, Mr. Bates appreciates good men when he sees them, and he has especially interested himself with good results in the career of many a promising youth. He is excellently qualified by experience and intellectual development for the high position which he now holds, and we feel safe in asserting that he will continue to exert the great power which rests in him for the advancement and protection of all deserving ones in the "wire age," which seems only to have just commenced.

#### The Inside History of the Consolidation.— Trial of the Williams Suit.

The trial of the suit of W. S. Williams against the Western Union Telegraph Company and others, having for its primary object the breaking down of the scheme of consolidation, was begun before Judge Truax, in the Superior Court, Equity Term, on the 16th ultimo, and was concluded on the 24th, the Judge reserving his decision.

The proceedings were remarkable for the great number of telegraph magnates and experts who testified—principally to their own forgetfulness of the most important transactions. Among the witnesses were Jay Gould—the first time he has "assisted" at a court of law since the trial of Edward S. Stokes for the murder of James Fisk Jr., in 1873—Dr. Norvin Green, General Eckert and D. H. Bates.

On the first day of the trial, the first witness called was Dr. Norvin Green, President of the Western Union Company. He testified that the Western Union did not feel the competition of the American Union until about July last. At that time the public patronage seemed to be divided between the two companies, and that, too, at the places considered most important by the Western Union. He had no idea, then, of a consolidation, and did not hear of such a proposition until the morning of the 10th of January last. In response to a note received by him, he then called upon Mr. William H. Vanderbilt. The first thing Mr. Vanderbilt said to him was: "I have seen the Great Mogul." In response to Mr. Sewell, Dr. Green said: "I knew, of course, that he referred to Jay Gould."

The conference between Messrs. Vanderbilt and Gould, Dr. Green said, took place on Sunday, Jan. 9, 1881. At it Mr. Gould intimated that he was willing to enter into negotiations for a consolidation of the telegraph companies in order to put an end to ruinous competition. A second conference took place at Mr. Vanderbilt's house on the night of Monday, Jan. 10, 1881. The persons present were William H. Vanderbilt, Augustus Schell, Dr. Green and H. McK. Twombly. It was then proposed to increase the Western Union capital stock to \$70,000,000, and to give the American Union \$10,000,000 of the increased stock for its property. The demand of the latter company was for \$15,000,000. Another conference was held between the parties above named on the Western Union side, and Messrs. Gould, Sidney Dillon and Russell Sage, representing the American Union. Mr. Gould was willing to take \$10,000,000, but his friends insisted upon \$15,000,000. Mr. Vanderbilt and Mr. Schell held a special conference with Messrs. Gould and Dillon, and these four persons prepared the agreement of consolidation which has been ratified. At the same time they determined that as quickly as vacancies should occur in the Board of Directors they should be filled by Messrs.



Gould, Sage and Dillon, and Gen. Eckert. Dr. Green next said, that in the course of the negotiations the representatives of the Western Union did not take fully into consideration the actual value of the American Union property. The things considered were the value of the property to the Western Union, and the benefit which that company would derive by getting the American Union out of its way. Dr. Green admitted that the American Union property was not worth more than half the consideration given for it by the Western Union, and he said that he believed that other Directors of the Western Union knew these facts as well as he did.

Under cross-examination by Mr. A. J. Vanderpoel, Dr. Green said that if the ruinous competition between the Western Union and American Union had been continued, the Western Union would have been compelled to stop paying dividends.

Upon further direct examination Dr. Green said that, among other things, the American Union Company, before consolidation, owned valuable contracts with the Pennsylvania and other railroad companies, whereby they operated their offices at comparatively little expense. The company was also in a position to make these contracts advantageously, inasmuch as Mr. Gould, its vice-president, was also an officer in a number of companies. The Western Union, Dr. Green said, was forced into expensive litigation with railroads controlled by Jay Gould, and, through the efforts of that operator, it was deprived of the control of 3,000 miles of lines along the Pacific railroads. In the six months last prior to the consolidation of the three telegraph companies, the receipts of the Western Union fell off \$804,000, the greater part of which reduction occurred in the last three months. Dr. Green admitted to Mr. Sewell, upon redirect examination, that the knowledge of the intended consolidation of the three corporations was valuable, and that on the strength of it he bought some stock. He also told some of the Western Union stockholders about the project, but refused to talk to other persons about it.

Mr. Augustus Schell, of the Western Union, testified, among other things, that the agreement of February 3 was made in the Twenty-third Street telegraph office, and that he, too, also went down town and bought some stock, and kept the matter very quiet.

General Eckert, General Manager of the Western Union, and formerly President of the American Union, said that when he was President the latter company had only 10,000 miles of wire, and that these ran in most instances parallel with the Western Union. He testified further that the American Union, at the time of consolidation, was just about paying expenses, and that in the previous year its receipts did not equal its expenditures.

Mr. D. H. Bates, Assistant General Manager of the Western Union, and formerly President and Vice-President of the American Union, testified that he was one of the original corporators of the American Union Company, having subscribed and paid for one-fourth of the whole amount of its stock.

Mr. Sewell asked how he paid for it.

Mr. Bates—With money in the shape of a check.

Mr. Sewell—Whose check?

After a controversy between the opposing counsel as to the propriety of the question, Mr. Bates was allowed to answer it, and replied: "Jay Gould's check." Mr. Bates said he was an expert in telegraph matters, and thought that a saving of \$2,000,000 a year would be effected by the union of the companies.

Mr. Giovanni P. Morisini, the so-called Treasurer of the American Union Company, proved himself the greatest know-nothing of all. He was examined by Mr. Sewell, who extracted the following valuable information from him:

Q.—What is your first name? A.—Giovanni.

Q.—George? A.—No; Giovanni.

Q.—You reside in the city of New York? A.—No, sir; Mount St. Vincent, New York.

Q.—You are Treasurer of the American Union Telegraph Company? A.—I am, sir.

Q.—How long have you been such Treasurer? A.—Since the organization of the company.

Q.—Have you got the books of the company? A.—No, sir.

Q.—Where are they? A.—I don't know where they are.

Q.—You don't know where they are? A.—No, sir.

Q.—Did you ever see them? A.—No, sir.

Q.—You never saw them? A.—No, sir.

Q.—Never made any entries in them? A.—No, sir.

Q.—Never kept any account of the money you received? A.—No, sir.

Q.—What were your duties as Treasurer of the company? A.—I was only nominally.

Q.—You were nominally Treasurer? A.—Yes, sir.

Q.—You never received any money? A.—No.

Q.—The capital stock of that company was never paid to you? A.—No, sir.

Q.—Did you ever sign any checks? A.—No, sir.

Q.—Did you ever do any duties as Treasurer of the American Union Telegraph Company? A.—No, sir.

Q.—Do you know anything about that organization? A.—No, sir.

Q.—Who made you Treasurer of the company? A.—I was appointed by the Board of Directors.

Q.—Did you get your appointment in writing? A.—It was by voice.

Q.—Who communicated the appointment to you? A.—I have forgotten—somebody.

Q.—Was there a salary connected with the place? A.—No, sir.

Q.—Who were the Board of Directors? A.—Well, I was not a director. I have forgotten who they were. I suppose Gen. Eckert and several others.

When the name of Jay Gould was called, that gentleman laid aside his white high hat and stepped up nimbly to the witness chair. He said that he was one of the original promoters of the American Union Company, and that the other two were Mr. Bates and Mr. Tinker; that the articles of association were not drawn by him or under his direction, and that he did not remember under whose direction they were drawn. He continued to forget as follows:

Q.—Mr. Bates testified that you drew the check for the money used to pay for the stock subscribed for in his name. Did you furnish a check to Mr. Bates for that purpose? A.—I do not remember.

Q.—Did you ever get it back? A.—I do not remember.

Q.—Did you furnish Mr. Tinker a check to pay for capital stock? A.—I do not remember.

Q.—Do you remember getting back any such check from Mr. Bates or anybody? A.—I do not remember the details.

Q.—How much did you subscribe yourself? A.—I think I subscribed for five millions.

Q.—Did you pay with your check for five millions? A.—I think I did. I think I paid in a check of five millions or ten millions. I am not certain. I do not remember the details.

With regard to the initiation of the consolidation scheme, the following was elicited from Mr. Gould:

Q.—Did you initiate proceedings for the consolidation of these several interests? A.—I did not.

Q.—Who did, if you know? A.—Mr. Vanderbilt wrote me this note:

"DEAR SIR: I would like to see you a few moments at 9 o'clock, if convenient to you, at my house. Yours, very truly,

"W. H. VANDERBILT."

Q.—I see it is not dated; but you have given us the date you received it? A.—I received it on Sunday, the day of the meeting of the committees.

Q.—That has been identified here as Sunday, the 9th of January. I suppose there will be no difference in your memory with respect to that? Mr. Sewell offered it in evidence.

Q.—You went to see Mr. Vanderbilt? A.—I did.

Q.—Was anybody present at that interview between you and him? A.—No, sir.

Q.—Will you be kind enough to state to the court as nearly as you can remember the actual language which you used on that occasion, and which Mr. Vanderbilt used? A.—Mr. Vanderbilt said that he had had some talk with Mr. Dillon, the President of the Union Pacific, and Mr. Dillon had told him that he thought I was not averse to making a fair arrangement between the companies. He said: I felt impelled to press it myself, because the stock was declining, and it was hurting a great many people; they were coming to his house and writing him letters,

urging him to have a settlement made, and he said that was the reason he had in seeing if some settlement could not be made. I told him that, so far as I was concerned—. He said, among other things, he had received a letter from Hatch. He said Hatch had written him that I did not control the American Union at all. I told him that was very true, I was only a minority holder; that parties that owned that had their own opinion of its value, and the best I could do would be to have committees—men that were largely interested in the two companies—meet together and talk the matter over. He asked me if I would have some of our people notified, and I told him I would. He said he would notify the Western Union. The next morning I received a note from him. I left, went away, and the next morning received a note from him notifying me of the meeting at his house on Tuesday evening, or Monday, January 10, 1881. I notified General Eckert, Mr. Ames, Mr. Dillon and Mr. Sage prominent members of the company. I think I notified some others, but it was decided uniformly that these gentlemen should be a committee representing our side. I had in view the fact of the official position of General Eckert as President, and the prominent position of the other gentlemen as directors of the company.

The remainder of his testimony, so far as the great financier could remember, was corroborative of the statement made by Dr. Green concerning the consolidation. Asked as to the condition of the American Union and its prospects at that time, Mr. Gould replied that the company had 70,000 miles of wire in operation, and between 800 and 900 offices. They were gradually opening out, and a large business was in prospect. He himself calculated to make 6 per cent. profit on the investment, but Gen. Eckert was of the opinion that 20 per cent. would be yielded. He estimated the monthly expenses to be \$80,000, and at that time the monthly receipts were as high as \$120,000. For this present year he calculated the receipts would be over \$2,000,000, while the expenses would still remain about \$80,000 a month. He had carefully watched the development of the American Union, and he was free to say that he considered their property cheap at \$15,000,000. He thought the American Union Telegraph system could not be reproduced, for the control of the railroads could not again be readily secured. Such a control as that obtained by the American Union would cost \$40,000,000 or \$50,000,000. His experience was that the railroads much preferred an association with the Western Union to association with a new company. Small companies would stand no show at all in competing with the Western Union for railroad favors. His ownership in railroads and his Directorship enabled him to secure exceptional advantages for the American Union Company. Such facilities were not for sale to-day.

Upon his cross-examination Mr. Gould said that at the time of the consolidation his share in American Union stock was about \$1,000,000, and that in Western Union about \$9,000,000. Mr. Vanderbilt distinctly told him that he had no stock of the American Union. Mr. Gould denied emphatically that portion of Mr. Williams' complaint charging that the consolidation was an unlawful combination to injure the interests of Western Union stockholders. He fully believed that the consolidation was the salvation of the Western Union. He thought the Western Union had much the best of the trade. As proof that the Western Union was very considerably benefited Mr. Gould pointed out the fact that its stock rose from 95 to 102. He asserted that public opinion recognized that Western Union had been strengthened, otherwise the stock would not have gone up. Mr. Gould added more information about the promising condition of the American Union at the time of consolidation. He had perfected arrangements to include in its system an additional 5,200 miles in the region to the southwest of St. Louis, where the Western Union was already strongly entrenched. Besides that, he had just let the contracts for a couple of cables. The Western Union earned from its cable service alone about \$500,000 yearly.

To Gen. Sewell Mr. Gould admitted, with a broad smile, that he had exchanged all of his American Union stock into Western Union stock; that he was one of the early birds. [Laughter.] He wanted to be on the safe side,



and, finding he was a little lame [laughter], he started early to make the exchange. He believed he was one of the first to make this exchange, for if his memory served him right, the machine for stamping the certificates was not ready quite as soon as he was. [Laughter.] The Central Construction Company also exchanged its stock for Western Union, and paid him his share of its bonds in Western Union. His share from this source was a million.

On the following day Mr. Gould was recalled, and, having meanwhile refreshed his memory, answered the following question:

Q. Have you found out since yesterday whether you gave a check for five or ten millions? A.—Ten millions.

Having thus come down to so fine a point as swearing to within fifty hundred thousand dollars of what he paid out, Mr. Gould remembered that he had talked with William H. Vanderbilt frequently, but never about buying or selling Western Union stock, and he never talked with him about a consolidation of the telegraph companies prior to Jan. 9, 1881.

The case for the defense having been opened by Mr. A. J. Vanderpoel, Dr. Norvin Green, President of the Western Union, was called as the first witness. Gen. Swayne handed him the last annual report of the Western Union Company, and asked him if the value of the property was correctly stated therein. Dr. Green answered that it was difficult to state the worth of such property as that of the Western Union, but that he felt certain that its value was understated in the report. The earning capacity of the Western Union, he said, was now certainly equal to at least that of an investment of \$80,000,000. He thought the company could easily earn 6 per cent. per annum upon a capital stock of \$80,000,000. Under cross-examination, Dr. Green said that as matters stood prior to the consolidation he did not think the value of the Western Union's property was \$41,000,000, exclusive of the \$15,000,000 of surplus earnings. He would not, prior to consolidation, have recommended the declaration of a stock dividend, as he did not think the company could have paid dividends upon increased capital stock. The value of the Western Union's property was depreciated by the opposition of the American Union, but it had appreciated since the consolidation. He felt certain that, although the Western Union's property may not have been worth \$41,000,000 prior to the consolidation, it thereafter became worth \$55,000,000.

The testimony of Mr. Jenkins Van Schaick, a witness called by the defendants, gave strong color to the claim already made that Mr. W. S. Williams was a "champertor," to use an old English law phrase, and that he bought the stock which qualified him to become a suitor for the express purpose of obtaining an injunction and thereby "bearing" the stock which he had bought.

That part of the examination of Mr. Van Schaick bearing directly on this point was as follows:

Q. Was Mr. Williams the sole owner of that property (the 100 shares of stock)?

Mr. Sewell—I object. He said he was the owner, and the gentleman is cross-examining his own witness.

The Court—How is it material?

Mr. Swayne—We labor under the belief that this 100 shares was transferred for the purpose of bringing this suit, and we are also under the impression that the ownership of this gentleman in this property was not an absolute ownership; that he is not the owner as he puts it in his testimony, in his own right; we deny that he was the owner in his own right; we deny that upon information and belief, and he avers it.

Q. When did he really become the owner?

Mr. Sewell—I object to it as immaterial, irrelevant and incompetent.

The Court—The question is allowed.

Q. Did Mr. Williams have the stock before the 22d of January? A. The title was in us, and we parted with the possession of the title to him.

Q. You bought stock for him that day? A. We bought for him stock that day. I remember distinctly buying 100 shares for him on that day, but I have no knowledge of that being the particular 100 shares which we gave to him.

This would seem to show that Mr. Williams (basing his rights as plaintiff on an even hundred shares of stock) bought that hundred shares

on Jan. 22, 1881, when newspaper statements, not contradicted on application to the parties concerned, had disseminated a belief that this stock was likely to be amalgamated with American Union stock, and while Mr. Rufus Hatch was bringing an injunction suit against the American Union Company before Judge Barrett. On Feb. 4 Judge Barrett dismissed the application of Mr. Hatch for an injunction, and on Feb. 11 Mr. Williams (having owned his stock just twenty days) brought an injunction suit on Western Union account.

Ex-Gov. E. D. Morgan, Russell Sage, John Van Horne, Charles S. Shvler, Sydney Dillon and John B. Van Every were also examined.

The argument was closed last Tuesday, and the case was submitted. Gen. Wager Swayne and Aaron J. Vanderpoel spoke for the defendants. Their line of argument was that at the time the plaintiff made his purchase of this stock notice had been given to every then stockholder of the Western Union Telegraph Company that the agreement of consolidation had been made, and that it had been proposed to increase the capital stock to \$80,000,000. The company owed no duty whatever to the plaintiff at that time. He bought his 100 shares of stock ten days thereafter, to wit., January 22, with his eyes open, and he has not ventured to go on the stand and to show that at the time he purchased this stock he did not know of that notice which had been sent to every then stockholder of the company, and he bought his stock from a person who did have that notice, and he takes it with all the notices as between himself and the company, and with notice of all the equities between himself and the company, and he does not complain in his complaint that he did not have notice of all these matters at the time of the purchase of his stock. He has, therefore, no standing in a Court of Equity.

Mr. Sewell summed up for the plaintiff. He argued that the plaintiff had an indefensible right to seek to prevent a proceeding that was clearly in violation of law. He was a stockholder of the Western Union, and he considered that it would be improper for that company to divide among its stockholders any of its increased capital stock unless those stockholders paid to it the value of the shares received by them. His position was a proper one, and he was sanctioned by the law. Mr. Sewell further argued that, as it was a condition of the contract for the consolidation of the three telegraph companies that the capital stock of the Western Union should be increased by \$38,000,000, and \$15,526,590 of shares should be distributed to Western Union stockholders, and that as these shares could not be distributed lawfully, the entire contract must fail for the failure of one of its essential parts.

Judge Truax then took all the papers, but reserved his decision pending the arrival of Mr. Vanderbilt from Europe. That gentleman arrived on the Germanic on Saturday.

At the close of the Williams suit, ex-Judge Whitehead, on the 25th. ultimo, opened the case of Rufus Hatch against the consolidation. This suit was brought for the same purpose as the Williams suit, viz., to restrain the Western Union from issuing \$15,526,590 of its increased capital to its present stockholders on account of dividends which those stockholders would have received if the surplus earnings of the company since 1866 had not been invested in real and personal property.

Ex-Judge Whitehead, in opening the case for the plaintiff, stated that the consolidation in Ohio and Pennsylvania was illegal, as the statutes of those States prohibit one competing company to purchase the lines of another. Also that the United States statutes hold the consolidation to be illegal, inasmuch as they forbid the purchase by a telegraph company using any military road or crossings or navigable rivers, of the lines of a competing company, though it may extend its own.

General Eckert was examined briefly, and an adjournment was ordered until Monday morning.

A St. Louis dealer in old clothes replenished his stock by delivering bogus telegrams to a number of wives that their husbands had been burned by nitric acid, which destroyed their clothing, and that fresh suits must be sent by the bearer.

### The Broom Begins to Sweep.

All persons of ordinary intelligence are supposed to have ideas. Telegraph employes, from the highest executive officer down to the manager, operator, clerk and messenger, all combined in one, of the smallest and most insignificant of the many thousand offices scattered over the country, are not only individuals of ordinary intelligence, but very many of them are of more than ordinary and not a few of extraordinary intelligence.

While each one of us thinks, or, properly speaking, while each one of us knows, from every-day experience, what is absolutely necessary for the proper performance of the business entrusted to us, we are often times compelled to squeeze through at a pinch, as it were, because the broom begins to sweep. Now that we are all one company, or at least working hard to be so, with good prospects of success; now that our capital has been doubled and we have the field almost entirely to ourselves, the first thing to be considered is to make provision for our regular quarterly division of the plums.

This is to be accomplished in two ways—by cutting down expenses, and by involuntary contributions from the public in the shape of tolls.

The second of these plans has not yet been entered upon to any considerable extent, but the first has been inaugurated, and as it is principally composed of two items—namely, salaries and supplies—and, further, as it is hardly thought good policy at this time to do anything about the firsts, except to let it alone (and for that let us be thankful), it readily becomes apparent that the seconds has the entire burden to carry, and, while many of us who are not in charge of large central offices are almost driven to distraction for material requisite for the proper running of our offices and to meet the requirements of the public, the broom is busily sweeping.

The interests and wishes of that capricious creature known as the public were consulted, when it was disposed to carry its favors elsewhere; blanks were sent to it without being asked for, and everything required could be easily secured by a simple nod. Pens, pencils and stationery sufficient, and a little margin besides, were always near at hand, in case of any sudden need of the same. But the broom has swept all that away, and the managers of the smaller class of offices, and even some of a higher grade, are hunting here and there trying to borrow from a neighbor what that neighbor does not possess, but which may be found in plenty locked up in the storehouses of the Grand Consolidation.

There seems to be a deep-rooted belief in the executive mind that about seven-eighths of the whole number of those who are in charge of the company's property all over the country, are either downright dishonest, wilfully destructive, or criminally negligent in their use of supplies. By an infallible system of calculation, allowing for all possible contingencies, so much material should be used in a certain time, and no more.

So many pens, for instance, it has been ascertained, are enough to do for your office, and you must do with them. Now, if they were all good; if the paper you have to use was not often about as fine as sack cloth; if every one used the same kind of pen in the same way; if every customer was particularly careful of them, which he is not (the only thing they seem to be particularly careful about is to remark in a loud whisper that they never saw a decent pen in a tele-



graph office yet); if the ink was not so largely composed of an acid which eats off the enamel almost immediately, and if all these causes and others combined did not tend to destroy a pen's usefulness almost before it had been pressed into service, the allotted number of pens might last the required time. As it is, however, if these reasons, and may be others that could be added, were taken into consideration, then perhaps the requisitions would not be cut down so much; and if a little more confidence were placed in the honesty and integrity of those who are fully deserving of it the interests of the company would not, we venture to think, suffer in consequence.

These thoughts, or similar ones, must have been forced upon the attention of many conscientious and scrupulously careful managers, who, owing to the fact that since business has increased so rapidly in the offices that are continued, they were found unprepared, through no fault or extravagant waste on their part, to meet this increased demand.

Brooms are exceedingly serviceable, and accomplish much good when properly used, but there is sometimes a desire to use them too constantly when new. It is a consolation, however, to reflect that they wear out in time, and then, fortunately, they don't sweep quite so often.

#### The Jones and Utica Fire Alarm Telephone Systems.

In our report of the exhibits made at the telephone convention, in the May 1 issue, mention of that of Messrs. C. E. Jones & Bro. was postponed until the cuts to accompany the article should be ready. We are now able to give cuts of both the Jones and the Utica Fire Alarm Company's systems.

The accompanying cuts explain, better than we were able to do in the May 1st issue without their aid, the Universal Section Switch, with Palmer's patent circular spring-jack, manufactured and exhibited by the Utica Fire Alarm Telegraph Company. As stated in that issue, objection has been made to the old style of spring-jack, that the spring became weak from use and wear, often leaving the line open at the contact points; also that small particles of dust, accidentally finding their way between the points, caused the same result.

In the Palmer spring-jack, which is mechanically a neat and handsome piece of work, these objections are removed, the spring and contact points being inclosed in a case into which dust cannot find entrance. The contact points make a rubbing contact, and therefore clean themselves, insuring perfect electrical contact, and the spring used being a spiral spring—instead of a straight or flat spring, as before—and of the best steel wire, and so arranged that its full power is always exerted, a perfect mechanical contact is also obtained.

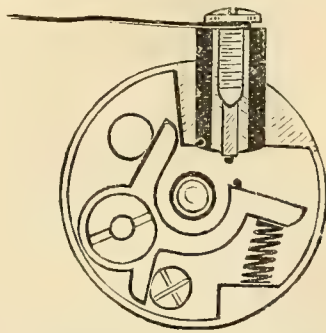
A considerable advantage is gained in the arrangement of the parts, so as to prevent the great annoyance found in many other systems, caused by the plug dropping out by accident after connection has been made. The plug when in this jack remains, and is firmly held in place until removed by the operator.

The annunciator drop is of elegant appearance, combining lightness with strength, and has met with much favor in telephone exchanges throughout the country. The combination of these annunciators, spring-jacks and connection strips, in sections of 25, makes a complete and tasteful switch-board.

The principle upon which the Jones apparatus works is original with the manufacturers in most of its general features, as well as in its details of execution. The system is applicable to either magneto or battery signals. Every line has one terminal in a central or branch office. The lines are arranged in groups of fifty or

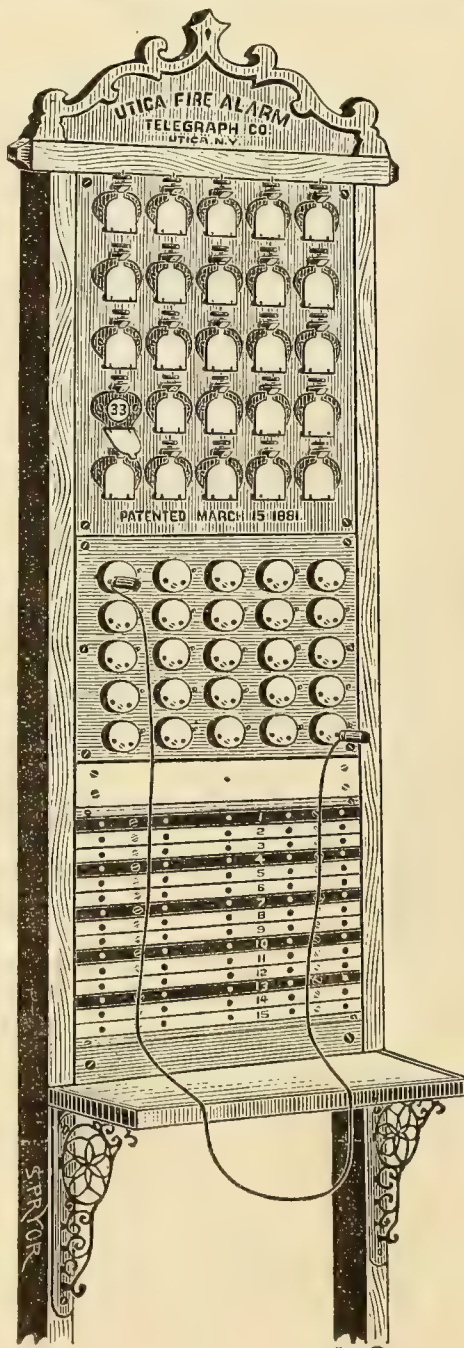
more, and are brought to a separate operating table, such as is shown in fig. 1. Each table is in charge of an operator, who sits before it.

Fig. 1 shows one table complete with forty drops, and a transfer arranged for four tables. The drops are fastened between the



UNIVERSAL SECTION SWITCH.

shelves by four screws, and any drop may be removed in an instant. New drops may be added at any time by simply screwing them on in position. The drop is very complete, contain-



SPRING JACK.

ing all the apparatus employed between the line and the ground wire. At the right is the cord holder, where cords hang when not in use. *F* is a plug socket, to use by inserting a plug connector, instead of holding over the crank, when the operator wishes to hold a prolonged conversation, or when he wishes to call or converse through the transfer. The spring lever *L*, in its normal position, is in connection with the telephone. When pressed down, it is in connection with the generator.

Fig. 2 shows a side view of one of the drops fixed between two shelves of the table, *D* being a target which falls when a call comes in from a subscriber. The target is reset when the crank

is turned for telephoning by the aid of the brass slide and the short arm on the right of the crank, as shown in cut. On the top of each shelf three strips are fixed, which are permanently connected up as follows: *G* to the ground, *E* to one side of generator, *T* to one side of telephone. The other sides of generator and telephone are connected to the ground. The incoming line is connected at the binding post *C*. The circuit passes thence through the coils to the metal work of the frame, thence by spring-jack *O* to ground wire. All the movable parts about the frame have rubbing contact, insuring complete circuit.

When a call comes in the crank is pressed to the right. A small eccentric on the same shaft with the crank lifts the spring-jack *O*, breaks the ground connection and makes a new connection through wing *S* to the generator strip, and sends signal currents to the line in answer to the call.

The same operation is performed in calling a subscriber. Some exchanges do not have their subscribers wait for an answer to their call, but instruct them to take down their telephone, and



SWITCH PLUG.

listen after giving the signal, as the operators are supposed to be always on duty. In that case, the operator, after receiving a signal, simply places the crank *N* to the left, thereby lifting spring-jack *O* again, and making connections with the other wing, at *S*, to the telephone, and at once communicates with subscriber.

When crank *N* is not pressed upon, it stands vertically, and the spring-jack *O* contacts with the ground strip. A spring holds it in this position. If the plug of a connecting cord be inserted in the socket *U*, the plug will lift the spring-jack from the ground strip, and the circuit will then be through the cord, whose other end may be plugged to another drop or to the transfer.

The drops are restored to their normal ground connection by simply pulling out the plugs. If the operator desires to listen, in order to test, when two drops are connected by a cord, he presses crank *N* of either drop to the left. This puts his telephone in connection with both parties.

Upon the top board of the table transfer sockets are arranged in groups of nine, and numbered from one to nine, each group being designated by a color or a letter, as red, white, blue, A, B, C, etc. These sockets are simply metal holes which receive the cord plugs, and each has a binding post behind the board. Each plug socket in each group is connected to the corresponding socket in the corresponding group on each table in the exchange; for instance, No. 1 red socket is connected by wire with No. 1 red socket on each of the different tables.

Each table in the exchange assumes the name of a color or a letter, corresponding to the order of the groups of sockets on the transfer-board. For instance, the first table is represented by the color red, the second table by white, etc., each table having exclusive use of its particular group of transfer sockets for making connections from its own to other tables.

In receiving transfers from other tables each operator plugs into the group representing the table from which the transfer is made. This peculiar transfer system is claimed to be absolutely perfect, being independent and non-interfering.

#### The Ground and its Relation to Telephonic Systems.

Filling, perhaps, the most important sphere in the realm of electrical communication, is the earth. We in America in this connection usually say the "ground;" yet there is no question but that the "earth" is both the most proper and the most comprehensive term to apply to this invaluable auxiliary.

No second place can be assigned to the earth, as a feature of our present telephone system. It is indeed the base, the groundwork, the very foundation upon which the entire superincum-



bent mass of telegraphy and telephony is erected. If we run a line two miles long, or twenty miles long, it is essential that a complete circuit shall be made before work can be done—before we can converse over it. What shall we do? Shall we construct a second wire from the end of our line back to the starting point, and join the two ends together through the instrument? Such a plan works well, but the way-aring man, or any other man, though a fool, can readily see that twice the line means twice the cost; and twice the cost counts. A cheap substitute offers itself; one that costs nothing and does its work on a moderately long line better even than a second wire, and one, moreover, that if properly applied at first needs no further attention. That substitute is the earth. Not every telephone exchange manager, we venture to say, credits the universal mother with the construction account thus saved.

When our lines are all completed and our switchboard is being set up, what is to become of the office end of perhaps a thousand lines, all of them safely connected to the earth at the

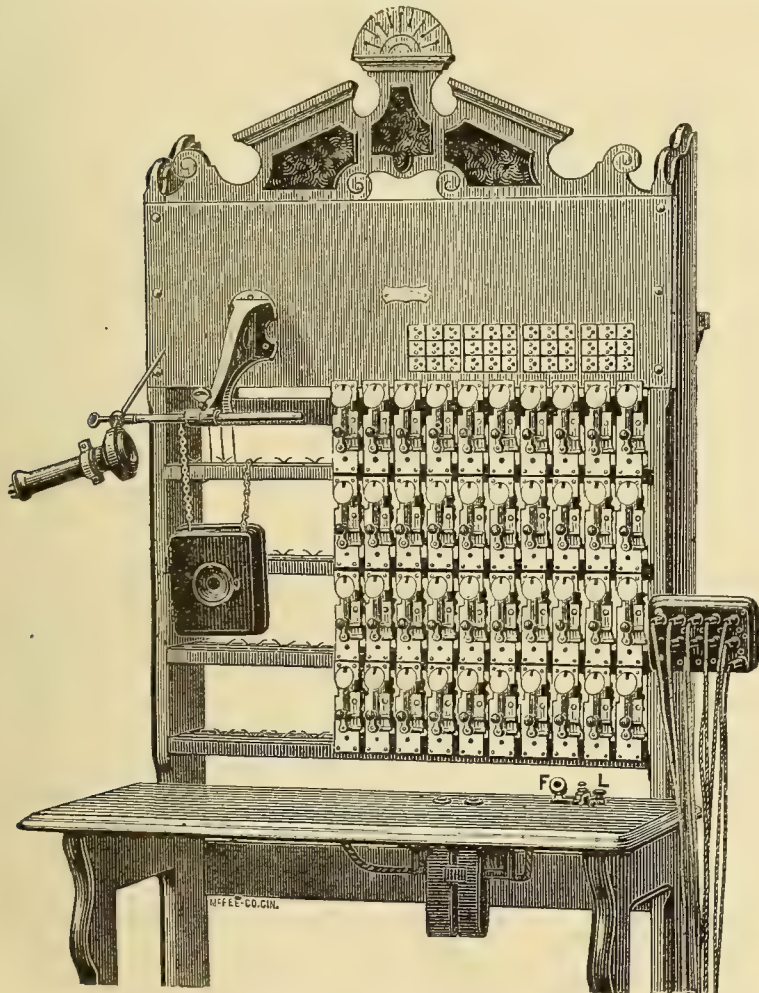
piece of magnet wire, and after locating his trouble between two stations, proceeds to connect the said magnet wire to the binding screw of the bell at the station next to the break toward the central office, so as to make at that station a temporary terminal. Cutting the station into circuit, what does he connect the other end of his magnet wire to? Again to the earth.

Two subscribers' lines are connected at the central office for conversation, and the supervising operator wants to know that they get connected all right, also to know when they finish, as in the telephone business time is money. What is to be done? Here, no doubt, the best way is to loop in listening and transmitting telephones, by means of a double cord, a wedge and a spring-jack, or other kindred devices. With the appliances found in many exchanges, especially the smaller ones, it is, however, often impracticable to do this. As an alternative, we can attach one bar in our switch to a wire, run that wire to our telephones and from them to the earth, thus forming a third leg to the two circuits already in communication, making an arrangement somewhat re-

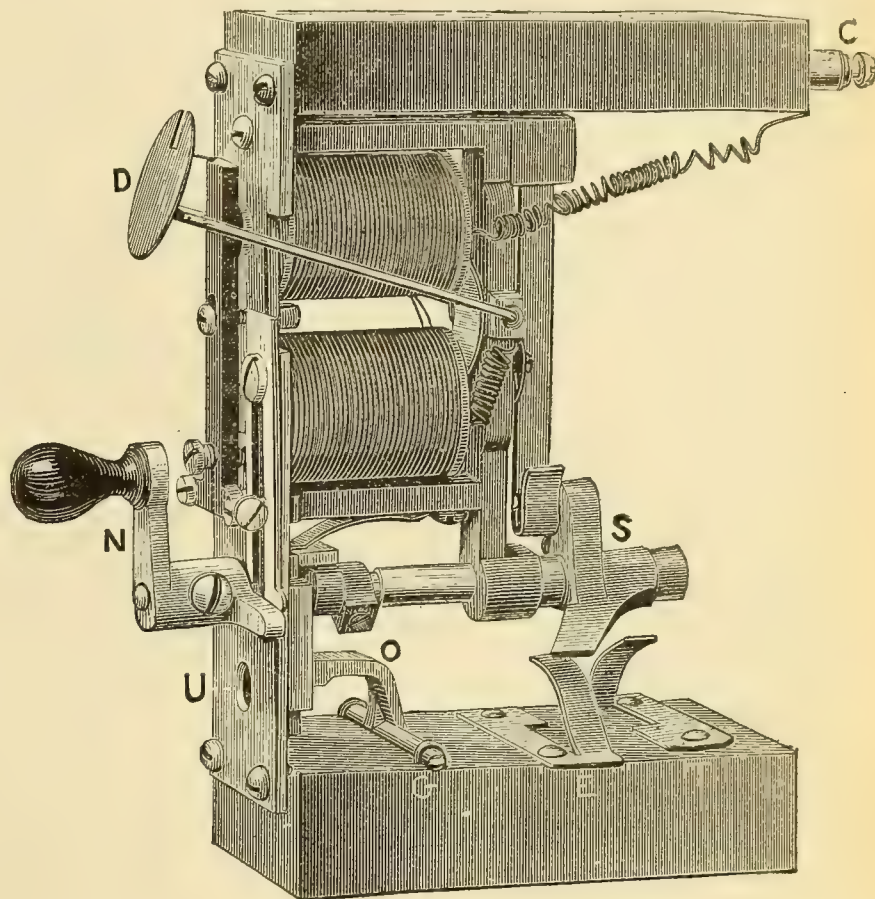
once or twice, and leaves it. The telephone works, as what telephone will not; but it is in boot," despite the day of small things, and conclude that because *they* know all that is written here, and a great deal more beside, time and space are therefore thrown away. The object of this and similar articles is to furnish popular instruction for the thousands of the rank and file of our telephone men of to-day; the men who have to do the work, and who have had no chance for either twenty years' or even twenty months' apprenticeship at electrical work. Many exchange managers, also, and superintendents, have had no previous experience in the line they are now in, and will gladly hail even a small portion of the heaven which it is hoped will by and by leaven the whole lump.

The terminal ground will be first considered.

We have built our line. We are now connecting our bell and telephone, and the lineman, who has come from his last place with powerful recommendations, runs a light copper wire from the last binding screw of the bell to a lacquered bronze gas fixture, twists the wire, bared for three or four inches but not scraped, round the pipe



JONES TELEPHONE OPERATING TABLE.



SIDE VIEW OF DROP.

outer end? Again we connect the earth and, strange to say, we may if we please connect the whole of our thousand lines to one earth wire, without any apparent embarrassment, or interference one with the other, except under certain conditions.

We find by sad experience that if we provide no means of prevention, the lightning will run into our offices and houses by means of the wires intended solely for electricity of a gentler nature, and will burn up as a parched scroll our bells, our telephones and our annunciators. What is to be done?

We attach between our delicate instruments and the lines lightning arresters, and connect these arresters to the earth.

Some of us, still harassed by that effete bugbear, the notion that everybody is interested in, and wants to hear, what we say over our telephone lines, must of necessity, to preserve ourselves from that dreaded contingency, use what is popularly known as the "secrecy switch," which consists, as every one does not know, of an arrangement of wires and springs which opens the line on the side toward which you don't want to talk, connecting the broken fragment attached to your telephone to what? To the wire leading from the earth.

When a line breaks, an inspector issues forth to find the trouble. He arms himself with a

sembling the celebrated three-cornered duel of Mr. Midshipman Easy. This is found to work well when the circuits connected are both short.

One more genus of earth connection is worth noticing in this relation, and that is the "accidental"—the ground that comes on a circuit in the still hour of night, when churchyards yawn, etc. No trouble is more annoying than the "ground" or "escape," and its most remarkable property is the wonderful facility and perfection with which the earth connection is made in such cases. No inspector, office manager or trouble lineman can have failed to notice the ease with which such a ground forms itself, and perhaps to have contrasted with it the infinite trouble and difficulty he has experienced in making a good and reliable legitimate ground in its legitimate place. We see, therefore, that the earth, besides acting to assist us in our construction, occasionally throws in a little volunteer business on its own account, to remind us, as it were, of the services it ordinarily renders.

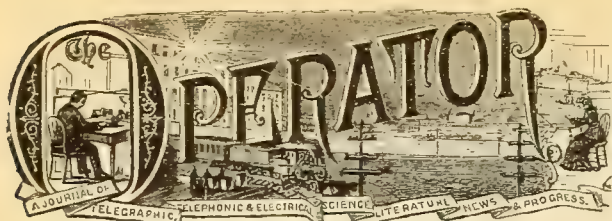
It will do none of us any harm, and perhaps some of us a little good, to cast an eye over the several uses of the ground wire, to see if we make the best use that we may of its benefits, and if possible to improve its facilities.

Let none of our telegraph and telephone experts, possessed of "every implement and means of art, and twenty years' apprenticeship to

spite of the "ground," not in virtue of it. The manager, who has, we suppose, seen fire, wonders why it takes so much battery to work that line. He has all he can do to attend to the complaints of the unfortunate subscribers; but at length finds time to take a trip over the line himself as he, out of the depth of his sad experience, suspects a bad connection. He passes along from station to station, coming in due course to the end, where after two minutes' scrutiny, he sees the cause of the "rottenness in Denmark." He remedies it in the following manner: Sending for his lineman, he will have a stout wire run to the nearest water pipe. The water pipe, which we will hope for its own sake is iron (lead should never be used), is then filed or scraped clean and bright for at least two inches laterally, and a No. 16 or 18 copper wire scraped bright, and having a length of at least six feet, is carefully and tightly wrapped around the scraped portion of the pipe, each convolution close to the preceding one until the whole of the brightened surface of the pipe is covered. The wire should be passed under several of the last convolutions, so as to pull tight, and enough left at the end, say eight inches, to make a good splice. This end is then spliced to the wire leading from the instrument; and for the first time in the life of our line it enjoys a good earth connection.

(TO BE CONCLUDED IN NEXT ISSUE.)





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## NOTICE.

Non-subscribers into whose hands a copy of this issue may fall, will find on page 209 an advertisement offering to send the paper from the present time until January 1st, 1882, on receipt of FIFTY CENTS. Low rates at which the paper and one or more of our books will be mailed together, are also given.

No telegraph or telephone man should now neglect to subscribe to the representative paper of his profession. The expense, by this offer, is only three and a half cents a copy, *seven cents a month*, for a 20-page paper, literally overflowing with matter which is of indispensable value to every enterprising and progressive member of the profession.

Send in your subscription at once. THE OPERATOR was never as good as it is to-day, nor its subscription list so large. The more subscribers we have the better and more valuable we shall endeavor to make the paper.

Present subscribers will confer a great favor by drawing the attention of those who may not see a copy of this issue to the above remarkable offer, and if they can send us a few subscriptions, we shall be under additional obligations to them. A Bunnell steel lever key will be mailed, postage prepaid, as a premium for either twelve yearly subscriptions, at \$1 each, or twenty-five subscriptions until January 1, 1882, at fifty cents each. Any of the books we publish will be mailed as premiums to the amount of 25 per cent. of the sum remitted. *Non-subscribers can secure a copy of the paper for themselves free until January 1st, by sending us FOUR subscriptions at fifty cents each.*

## A SUCCESSFUL TELEGRAPHER

The name of David Homer Bates, whose picture we publish on our first page to-day, is indissolubly connected with the history of the telegraph in America, while Mr. Bates himself is still in the full grasp of his great abilities.

There seems to us to be something eminently proper in a journal especially representing the workers of a particular craft tracing out the successful career of one of its greatest chiefs—one who has had so great an influence on the destinies of so many of us, and on public affairs in general. Telegraphers have always been noted for their hearty enthusiasm for a worthy chief, and the worthy chief is no less noted for the implicit confidence which he reposes in reliable subordinates. We must feel, therefore, a deep interest in the personality of a man who for so many years has been looked up to as a just and impartial

administrator and, at the same time, as a genial friend. Nor are our reasons totally devoid of selfishness. Except for the mutual trust and affection which exist between employer and employé there could be no security of salary, position or promotion on the one hand, or of good workmanship on the other. This mutual esteem we should cherish, if we have even our own interests at heart, since no chains can be heavier than those forged by intolerance, oppression, mistrust and suspicion; and no organization, however rich or apparently strong otherwise, can be more quickly disorganized than by these agencies.

The oft-told story of Success is always profitable reading for the studious and ambitious, and we never tire of repeating it in all its varied and splendid forms. Those who are young or deficient in certain attributes necessary to success in life must, by reading and studying the examples of their illustrious predecessors, gradually, and, perhaps unconsciously, absorb many of the noble characteristics thus brought under their observation; and we could present no more fitting example than that which is produced to-day—an example of the comparatively unknown boy toiling in an obscure railroad telegraph office; gradually working his way upward: winning the esteem and confidence of those about him; the superintendent of an extensive and important district at twenty-four years of age; the President of the most complete and successful telegraph company ever organized before he is thirty-six; and stepping, in a period of less than twenty years, from the railroad operator's desk to one of the highest positions in the telegraph service.

With the present wonderful growth of the telegraph and the telephone, we may reasonably expect soon to have double or treble the present volume of telegraphic business. With this increase in traffic will necessarily come additional opportunities for the ambitious and deserving ones who are quick enough to perceive favorable chances and capable enough to anticipate or improve them.

In thus affording us such an excellent example of faithful work well rewarded, Mr. Bates has done more good for the *morale* and discipline of the service than he himself is, perhaps, willing to admit. Let us hope that the wholesome lesson will not be lost upon his fellow-workers; for he who can go and do likewise, who can command at will the patience, the industry, and the indomitable energy of David Homer Bates has within him the true source of all real and permanent success in life.

THAT was a characteristic remark made by Mr. Jay Gould during the Williams trial, in which he said, "with a broad smile," that during the negotiations for the abandonment of that grand and promising enterprise, the American Union Telegraph Company, he was one of the "early birds," or to improve upon Mr. Gould's classic remark, Mr. Gould simply "got his work in" while the remainder of the boys were napping. No one who has studied "the Great Mogul's" methods will doubt the truth of this candid declaration; and, while the abandonment of such a perfect opposition may have been very profitable to the aforesaid early birds, we who were innocent enough to accept their pledges of undying opposition fail to see where the occasion for the "broad smile" comes in. Under these protestations, expressed and implied, we supported and vouched for the genuineness and permanence of this "opposition;" we, along

with other gullible people, put implicit faith in personal assurances that theirs was truly a lasting and uncompromising opposition to the great telegraphic anaconda of the Western hemisphere, and when we hear of how the "early birds" slipped from under, we fail to see upon what pretext Mr. Jay Gould introduced his famous broad smile. The consolidation threw out of employment many men with large families, some of whom had been faithful servants for a quarter of a century, and for them there must be a world of pitiless malignity in that rich man's broad smile. But it is a tender topic, and is better left untouched if those who have been responsible for the pain, the canker and the grief can not approach it without betraying their mirthfulness in "broad smiles," and tossing off flippant remarks about the "early bird." He smiles best who smiles last.

In that popular work, "Lightning Flashes," there is a funny picture, drawn by Werner, entitled "A Scene on a Jersey Railroad," which has hitherto been accepted only in a Pickwickian sense; but it has recently been enacted in real life. Two phenomenal fools in North Carolina quarreled over the wire, and finally agreed to meet and fight a duel. Mr. de Fevre was angry, and the blood of the Cones was aroused in his antagonist, so that each man, muttering to himself, "Be he live or be he dead, I'll grind his bones to make my bread," boarded a train to meet the other. They proved, however, that there was at least one glimmer of sense left in their heads when they agreed to discard the deadly pistol and to substitute a war of fists. They went at it, hammer and tongs, their teeth achatter with the incessant shower of stinging blows, and finally wound up with an inglorious and unscientific knock-down-and-drag-out affair. Then they went back to their keys, sadder and, we hope, wiser telegraphers. The victor felt no better for his victory, while the vanquished "reck'd not of the prize he lost, but of his home, and that was far away," while the question of precedence on that circuit is still unsettled. They will probably keep on "salting" each other over the wire every time that either of them can scrape together a hundred words of press. It is some years since Jack Hurley, of Springfield, Mass., took the train for Worcester, with the intention of thumping speed into the operator at that place, and for which he was promptly retired to the local stone-jug. If these two telegraphic pugilists have not already been similarly "jugged," it is time they were taken in hand by their Superintendent.

REPRESENTATIVES of the American Cable Company arrived at Canso, N. S., on the 19th ult., to witness the landing of the shore end of the new (American) cable. There was much excitement among the citizens there. The steamer Faraday, which had been laying on and off the coast of Nova Scotia at Canso for several days, waiting for the dense fog which enveloped the whole coast to lift, put into Dover Bay about noon on the 21st ult. She reported an unusually quick run. The landing was successfully accomplished last Wednesday, the 23d, at seven o'clock in the evening, and then the Faraday commenced to "pay out" at the rate of 130 miles per day. The tests of the cable were kept up during the trip, and showed it to be in the most perfect condition. If no unforeseen accident prevent, the laying of the cable will soon be successfully completed, and it is now progressing at the rate



nearly one hundred and fifty miles every twenty-four hours. The projectors of the new cable are very hopeful as to its future. A commodious building for the accomodation of the staff of the station has been erected at Walsh's Point, near the shore, and a land line has been put up from that station to Canso.

The American Cable Construction Company was represented by its President, Mr. Doren, who expresses himself well pleased with the tests and appearance of the cable.

There are conflicting rumors as to whether or not "a working arrangement" has been effected between the new company and its European rivals.

THE firm attitude assumed by the English telegraphers in making their just claims is having its natural effect, and the indications are that the authorities will meet the operators more than half way. The petition of the latter demands, among other things, that the salary, on entering the service, commence at 16s. (\$4) per week, rising uninterruptedly by annual increments of 2s. (50c.) per week to £200 (\$1,000) per annum; that all the overtime (extra) be paid at the full rate of pay, reckoning six days per week, without deduction for any partial holiday; that all Sunday duty be paid for at the ordinary overtime rates; that seven hours be considered a night's work, any time worked beyond that to be paid for as overtime, duties after midnight to be considered as nightwork; that eight hours constitute a day's duty, to be performed without break, abolishing split or divided attendances; that three weeks' annual leave of absence, with pay, be granted to all "clerks" receiving 16s. to 40s. per week, and one calendar month to those receiving more than that amount. The case has been pending for some months, but in the House of Commons last Tuesday evening Rt. Hon. Henry Fawcett, Postmaster-General, replying to an inquiry, said that both the Treasury and Post-Office are now considering proposals which had been submitted to them in regard to the position of telegraph operators. He expressed his willingness to do what he could in their behalf. The result is watched for here with much interest.

ANY operator who is able to do satisfactory telegraphing, can get work now if he wants it, and strictly first-class men are eagerly sought after. This means telegraphic prosperity, consequent upon the extraordinary activity apparent in all branches of trade. The disposition to recognize our business as a profession, and to draw closer together as such, appears to be gaining ground, and we are pleased to see the discussion carried on openly and above board. Although salaries, particularly on some railroad lines, are wretchedly low, we have, in joining hands, less to expect financially than we have in the matter of purifying and elevating the profession. The indiscriminate manufacture and employment in the past few years of great numbers of cheap telegraphic quacks and plugs has materially lowered the standard. While we should do nothing to prevent any eligible young man from learning the business, we should discountenance the flimsy methods of "colleges," which literally grind out half-trained, ignorant and incapable tyros to be picked up at a bargain by shoddy superintendents, whose zeal to be considered economical far exceeds their supply of executive brains. In this way the profession is brought into disrepute. By giving attention to

this matter—and our executive officers will find it to their advantage to aid us in purifying our ranks—we can soon produce an educated and thoroughly trained class of operators.

WHATEVER may be said against the principles of the great telegraphic monopoly, there can be no two opinions with regard to its superb management, and its unprecedented facilities for handling the public business. There was a striking example of this when, on the night of Friday, the 20th ult., 109,486 words of "specials" were sent to Chicago. Without any previous warning to the company, the special correspondents in this city filed for Chicago that evening the greater part of the revised New Testament. This "dispatch" was equal to thirty-three columns of a newspaper and comprised 28 chapters of "St. Matthew," 16 of "St. Mark," 7 of "St. Luke," and 5 of "St. John." The officials at once made up twenty-one through circuits to Chicago, each a thousand miles in length, and in seven hours they were all clear. On the following afternoon, and again without warning, the "Epistle to the Romans" and the "Acts of the Apostles" were handed in for transmission to Chicago, and were immediately disposed of on seventeen wires. When it is understood that this sudden rush was handled without previous warning and without delay to the ordinary business, we must give unstinted praise to the management and discipline which makes such a feat possible. General Eckert, the local managers at Chicago and New York and the operators are alike worthy of the highest commendation.

BY the death of Mr. L. A. Gobright, of Washington, every telegrapher has lost a friend. During his forty-five years connection with the press in that city he became personally acquainted with every telegrapher who has resided there, and few operators who have worked at the Capital can forget how much they were indebted to Mr. Gobright for "extra." The appearance of his smiling countenance in a telegraph office, with a hundred sheets or so of press matter, and his pleasant injunction to "hoop 'em up, boys," was always the signal for commotion and fast telegraphing. Everybody knew and loved "Grandpa" Gobright, from the President of the United States down to the humblest telegraph messenger, and the news of his death has caused profound sorrow.

It will be ten years on the 10th inst. since that memorable Saturday, June 10, 1871, when the Morse statue was unveiled in Central Park. Few can have forgotten the joyful meeting of so many telegraphers from all sections of the country; the enjoyable excursion on the steamer James Fisk, Jr.; how our youthful bosoms swelled with pent-up pomposity as we marched aboard at the Pavonia Ferry and the band of the Fifty-ninth Regiment struck up "Solid Men to the Front;" how we appreciated the unceasing courtesy and hospitality of Mr. L. G. Tillotson, and how the presence among us of Father Morse himself made the occasion sacred in our memories.

THERE is a good deal of instructive and encouraging reading for the incipient opposition companies in the testimony given last week in the Superior Court, especially that part of it in which the various witnesses admit that the Western Union paid for the American Union more than twice its face value, the directors of the older company being quite willing to forget

the actual value of the lively opposition, while they looked only to the value of getting it out of the way. This little piece of inside information will tend to run up the price of the next opposition that is offered for sale.

IN the case of Anastasia Morrissey, who has just obtained a verdict against the Western Union for non-delivery of her message, the courts have once more affirmed the doctrine that when a telegraph company seeks public business it gives implied assurances that it employs the most skillful operators, reliable messengers and perfect instruments. As long as they do this, and pay good salaries for good men, they keep faith with the public; but when they get down to hiring old pelters at \$50 a month they are invariably mulcted, as they should be, for damages.

NOTWITHSTANDING the emphatic denial of General Superintendent C. H. Haskins, there can be no doubt of the truth of the report that the consolidated Western Union has leased the lines of the Northwestern Telegraph Company, thus adding 15,000 miles of wire to the great monopoly's system. Under the Wisconsin law the concern cannot be bought, but as Col. Clowry will probably include it in his Central Division of the Western Union by the 1st of next month, a perpetual lease may answer the same purpose as direct sale.

THERE is a swarm of lawyers already preying upon the monopoly, many of whom should, for economy's sake, be literally fired out. They are only a grade better than plumbers and hackmen, and if Gen. Eckert has any objection to paying out a million dollars or so in fees, he will apply the Sliding Scale to his force of legal mischiefs-makers.

THE OPERATOR invites questions on telegraphic and telephonic subjects of general interest, which will be answered, as far as possible, in the issue following their receipt. It is hoped that these questions and answers will prove of much value to our readers, who are invited to avail themselves freely of the privilege offered.

THERE is a field just opening in Mexico for wide-awake telegraph men. Money for telegraphic enterprises seems to be had simply for the asking, now-a-days, and the next year will see a wide extension of the telegraph south of the Rio Grande.

MR. AND MRS. CYRUS W. FIELD arrived home on the Britannic last week, after a tour around the world. They have been absent since the 2d of December last. Mr. Field has nothing new to say about the proposed Pacific cable.

IT appears from Dr. Green's testimony before Judge Truax that Mr. W. H. Vanderbilt was in the habit of referring to Mr. Jay Gould as "the Great Mogul"—probably because he found he had caught a Tartar.

OUR operators, by their remarkable feat of telegraphing the Bible to Chicago in quick time, have proved their title to pre-eminence. The effect on their morals has not yet been observed.

THE large amount of interesting matter for this issue necessitates a 24-page paper again.

WESTERN UNION stock is quoted at 129. Last issue it was 118 $\frac{3}{8}$ .

THE Jay now claims to be one of the early birds.



## Notes and Queries on Electricity and Electro-Magnetism and their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 127. Describe briefly the American District system of telegraphy.

A. This system has been for several years a great convenience in our cities; and its electrical department is simplicity itself.

The circuits, like those of the fire telegraph, are metallic, leaving one pole of the battery in the district office, running to a number of boxes placed at the residences and places of business of subscribers, and returning by another route to the other pole of the battery at the office. The boxes are merely small models of those used for fire service, and consist essentially of a metallic break-wheel and contact spring, both of which form part of the circuit. When the wheel rotates the circuit is closed and broken, and the signal correspondingly given. Different signals may be sent by the same box by different manipulation. For example, if a box signal was 29, 29 once transmitted would signify that a messenger was wanted; twice, would be a call for a policeman, and so on.

The signals are given by the back stroke of a relay closing a local circuit, embracing a local battery-register and a single stroke bell. The register records the signal on its strip of paper, and it is simultaneously struck on the bell.

Each subscriber is represented in the office by tickets bearing his number, so that no time is lost in ascertaining from whom the signal is sent. The batteries used in this system are generally of the gravity form, and are not usually very large, as the entire external resistance is not great, the relay being the only electro-magnet at all times in the circuit. If a line breaks, or disconnection from any cause takes place, the break is first localized, and until it can be repaired, a ground connection is attached at the nearest box on each side of the trouble, so as to complete the circuit through the earth. If an accidental connection with the ground should occur, or, as it is technically called, a "ground" appears on the wires, it should at once be tested for, by grounding the circuit at the office, and opening or sending signals from various boxes on the circuit.

Each box between the office ground and the fault will when operated send in its signal, while the boxes beyond the fault will not, they being short circuited or cut off by being between the fault and the office on the other side, so that neither the relay nor battery are in circuit with them. As soon as the ground is localized, it should be removed, as if another ground should appear, the effect would be the same as that just indicated—that is, all stations between the two grounds would be cut out.

Q. 128. What is usually the system of police telegraph?

A. There is no system especially devoted to police inter-communication, each city possessing such a system using that which in the eyes of its council appears to be the best.

In New York, a dial telegraph, worked by a step-by-step motion, is employed, wherein a pointer or index hand travels round a dial marked with the letters of the alphabet and the cardinal numerals. Each time the circuit is broken and closed the pointer advances one letter. This system is very popular, on account of the economy of maintenance and the ease with which it is worked.

Q. 129. Describe in a general manner the system of the stock printing telegraphs.

A. The stock printing telegraph is also essentially an American institution, and may now be said to be a necessity among the stock, cotton and produce brokers of our large cities. The entire business has grown up since 1866. Anything of the nature of a complete history of the business, or any details beyond a general description of its operation, would be out of place here.

The quotations of stocks, cotton and produce are collected from the various exchanges, and transmitted from the office or central operating

room, over a great number of wires to the offices of the subscribers. Information regarding interesting events and general news of the day is also gathered and furnished to special circuits arranged for that purpose.

In the place of business of each subscriber is a portable printing instrument which prints the communications in plain Roman type.

Many styles of printing instruments have been tried, but they may be all resolved into two classes. First, those operated by the automatic make and break of the circuit, and second, those operated by electrical pulsations of alternate positive and negative polarity.

An instrument of each character will here be briefly described.

The most generally used instrument of the first class, on account of its simplicity of operation, is what is technically known as the "three-wire stock" instrument.

It is, as its name indicates, operated by three distinct wires, one of which influences the alphabetical type wheel, another the numeral type wheel, and the third operating the press magnet and printing the quotations.

The transmitting device is alternately switched to the alphabet and figure wire; and whenever the type wheels are brought to the required letter or figure, the press wire is placed automatically in the battery circuit, and the impression given.

The wheels are operated by a step-by-step motion, each one on its own arbor, on which is also fixed a star-wheel, which is advanced by a lever attached to the magnet armatures.

The armature levers are both retracted by strong springs, and the star wheels are so placed that each time the armatures are attracted the type wheels are advanced one character, and each time they are withdrawn the wheels are advanced another character, so that work is done both by the charge and discharge of the magnets. The press magnet, by special mechanism, causes the strip of paper to advance a certain distance after each impression, so as to be ready for the next one. This instrument is much liked by the patrons, on account of the clear impressions and large type printed by it.

The instruments of the second class mentioned are, if possible, still more simple in construction, though a little more complex in principle, than the machine already described. They require but one line wire, and the type wheel prints both letters and figures, being made sufficiently large to contain both. The type wheel axis is driven by a clock train, operated by a weight or spring, and is controlled by an escapement attached to a polarized armature. This latter vibrates on pivots between the opposite poles of two electro-magnets, placed in the same circuit, facing each other, and both working the same polarized armature.

Instead of being vibrated by the alternate opening and closing of the circuit, it is drawn from side to side by rapidly succeeding pulsations of alternate polarity. That is to say, if one pulsation is sent from the positive pole of the battery, the next is sent from the negative pole, and so on; and each pulsation permits the type wheel to advance one character. A third magnet, with a much longer core than the two already mentioned, is also in circuit, and is provided with an armature, whose lever presses up the paper to the type wheel, to print the impression.

The rapidly alternating pulsations pass through this magnet, but its armature is not affected until a pause is made, because the alternately opposite pulsations succeed each other so rapidly that the long magnet has not time to become charged sufficiently to attract its armature, which is kept against its back stop by a stiff spring.

When, however, a current of either polarity is kept on the line longer than usual, the armature is instantly attracted, and the printing performed. The movement for feeding the paper is also performed by the armature lever of the printing magnet.

This instrument prints very rapidly. Both styles of instrument are placed in any required number on a circuit, and any number of circuits may, by relays or other contrivances, be operated by one key-board and operator.

CORRECTION.

To the Editor of The Operator:

SIR: Before the manuscript containing the

answer to 117 of my "Notes and Queries" left me an error crept in, which though small in itself, is yet large enough in its results to demand correction. It should read from the second paragraph as follows:

"The same rule relating to the proper proportionment of the electro-magnet to the circuit holds good in this case. For example, we have a line 200 miles long of No. 9 galvanized wire and a battery of eighty Calland cells. We are to have five relays. What should the resistance of each of those relays be?"

"We call the line wire resistance 16 ohms per mile; then for 200 miles the line resistance will be 3,200 ohms. Calling the battery resistance 3 ohms per cell, the resistance of the entire battery will be 240 ohms, giving as the total resistance of line and battery 3,440 ohms.

"Then, following the rule already given, we must make the total resistance of the electro-magnets 3,440 ohms also. This, divided by 5, for the number of magnets, gives, as the resistance of each magnet, 688 ohms. In practice, however, as has already been observed, it is well to keep the magnet resistance less than that of the line and battery, to allow for variations in resistance due to weather. Moreover, in this country, for uniformity, the resistance of the majority of relays used is made very much the same for comparatively long and short circuits.

"The condensed reason, then, why we use fine wire—and a great deal of it—for circuits of high resistance is, that the high resistance of the circuit greatly enfeebles the current, and we must use fine wire to make the best of the remaining strength of the current by a greatly increased number of convolutions." T. D. LOCKWOOD.

BOSTON, May 16, 1881.

## Cabinet Organs.

There are numerous firms throughout this country who advertise Cabinet or Parlor Organs, claiming superiority from facilities of manufacture, when in reality they never were manufacturers of any portion of an organ, and are simply agents and middlemen for firms who dare not, owing to the inferior quality of their instruments, advertise them over their own names. It is a well-known fact that the United States leads the world in the manufacture of Organs in quality of tone, excellence of mechanism and beauty of design; and no manufacturer stands higher in every respect than the Hon. Daniel F. Beatty, of Washington, New Jersey, whose manufactory is now the largest in the world that ships direct. This enterprising gentleman was the first to offer the music-loving populace an opportunity to purchase direct of the manufacturer, thereby saving the public the enormous profits of agents and middlemen. He has made many liberal offers, and has never failed to keep every promise and more; we have yet to receive the first complaint from any of our readers who have dealt with him. His last and grandest offer outstrips all others, and is an evidence of his unparalleled success. The Beethoven Organ is the most brilliant and powerful musical combination ever perfected, and its superiority over all other Organs is attained by the valuable Patent Stop Action held only by Mr. Beatty. The reader should bear in mind that the "Beethoven," which is shipped on one month's trial, has 27 Stops, 10 full sets of Golden Tongue Reeds, and is in every respect and detail the finest instrument in the world. The price at which the Beethoven is offered, \$60, which includes stool, book and music, must bring it within the reach of everyone. It is important that anyone desiring one of the Matchless Organs should order and remit at once by a Post Office Money Order, Bank Draft, Registered Letter or Express prepaid. Nothing is saved by correspondence, as the orders for this particular style are coming in so rapidly that the capacity of the Beatty Manufactory is being tested to its utmost, and cash orders very naturally take preference on order book. The feature of this great offer is to refund money sent and pay all freight charges if the instrument is not as represented. Is not this sufficient guaranty of the fair dealing of Mayor Beatty?



### Still Monopolizing.

As announced in our last issue, the Western Union has absorbed the Northwestern Telegraph Company. Superintendent Haskins, of the latter company, denies the truth of this statement, but the facts indicate that Mr. Haskins' wish is father to the denial. The lease has already been signed.

The Northwestern Telegraph Company was organized about twenty-five years ago by a few gentlemen who have retained control of it ever since. The territory occupied by them is north of Milwaukee and Janesville, in Wisconsin, their lines extending throughout that section of the State, the Michigan Peninsula, the whole of Minnesota, and into Dakota as far as the Missouri River, connecting with Manitoba. They have about 15,000 miles of wire, and in the neighborhood of 800 offices. The Western Union has been trying for years past to get hold of these lines, but would not agree to the Northwestern Company's terms. Within the last two months, however, fresh negotiations were opened, and an understanding reached. The details are a secret, and all that is known is that the Western Union has secured a perpetual lease of the wires and will take possession July 1. They cannot be bought on account of the Wisconsin law. The business relations of the two corporations have always been intimate, a contract existing between them, but there has been much complaint on the part of patrons by reason of delays in transmitting messages. Now that the Northwestern is to become a part of the Western Union system things will run smoothly. There will be no more transferring of business, but messages will be checked and sent direct to their destination. Mr. Simmons, of Kenosha, is President of the Northwestern, H. B. Hinsdale Secretary and Treasurer, and C. H. Haskins General Superintendent. All will probably retire, but as to the new managers nothing can be learned at present. When the Western Union takes charge the lines will become a part of the Central Division, which is run by Col. Clowry. When this happens the lines will be extended, the system strengthened, and better telegraph facilities be supplied. The headquarters of the district will perhaps be transferred from Milwaukee to St. Paul.

### The French Cable's Suit Against the Monopoly—Jay Gould Did not Control American Union and Does not Now Control Western Union.

Last Tuesday, May 24, the Western Union Telegraph Company filed its answer to the amended bill of the "Compagnie Française du Télégraphe de Paris à New York." The suit was brought shortly after the consolidation of the land telegraph companies was made public, to restrain the Western Union, under the late consolidation, from interfering with the contract of the French Cable Co. with the American Union, relative to the interchange of cable messages.

The answer is a general denial of the charges. It avers that the dividend among the stockholders of the Western Union represents the investment of the earnings of the company in the purchase, construction and equipment of additional lines since July 1, 1866, and that these were actually worth the amount mentioned in the agreement, \$15,526,590, exclusive of the stock of the Atlantic & Pacific Company.

It denies that at the time of the agreement of Jan. 19 Jay Gould and Frederick L. Ames owned and controlled a majority of the stock of the American Union Telegraph Company, or that Gould at the time of the filing of the bill owned or controlled, or now owns or controls, a majority of the stock of the Western Union Telegraph Company.

There is an admission in the answer that the American Union has transferred its property, rights and franchises, with the exceptions mentioned in the agreement, to the Western Union, and that the property of the former company has become so merged into and blended with that of the latter, that any attempt to sever and restore it would cause more injury to the defendants and to the public than the complainant can sustain. The effect of the purchase, it is averred, has been to enable the Western Union to reduce the rates charged by it for the trans-

mission of messages. The answer finally petitions the Court that the bill of complaint against the Western Union Company be dismissed, with costs, on the grounds set forth.

### A Telegraphers' Society Organized.

The statement in the last issue of THE OPERATOR, that a meeting of prominent telegraphers had been called for Sunday afternoon, May 22, to organize a society to protect the interests of the fraternity, drew together a good representation of operators. The committee appointed at the previous meeting to draft a constitution reported, and after some discussion, the constitution as reported was adopted. It states that the object shall be the improvement of its members by industry, economy and sobriety; that the organization shall be composed of a District Council and sub-districts, or branches; that the branches shall control their own funds, etc., and that the initiation fee shall be \$1, and monthly dues 50 cents, which shall be deposited to the credit of individual members, there being no expense connected with the maintenance of the society.

Seven members may open a branch, but a membership of fifteen is necessary before it can be represented in the District Council.

Five branches have already been opened, one in Jersey City, two each in New York and Brooklyn; and it is expected that three more will be started in a few days.

The organization already comprises over 150 members, making it an assured success. Those desiring to join the society, or wishing further particulars concerning it, can be accommodated by applying to the Secretary, Mr. J. B. Taltavall, of the Associated Press office, this city.

### Answers to Correspondents.

AMBITION.—Yes, we think you cannot do better than commence to study "telegrafting" at once. You do not spell or write as well as you might, but that is of little consequence. There is plenty of room, and operators are in great demand. The work is ridiculously easy—from 11.30 A. M. to 2 P. M. on week days, with an hour for dinner (paid for by the company), and no Sunday work—and an immense salary. Jay Gould gives each operator \$5,000 every Christmas, and if Vanderbilt gives anything, Gould "sees" him and goes \$1,500 better, so that the operators get rich quickly. If you feel tired after sending a dozen messages or so there are barber's chairs and foot-rests on which to revive, and a pool table in the coat room to divert the overworked mind. If you want to take a vacation for three months or so, you are expected to notify the company in advance, so that the officials can send on your salary by express; in addition to which you can use the company's yacht. Yes, we would advise you not only to learn the business at once but also to tell all your friends to "get on to it." You must, however, commence as a pole-climber, and gradually "work upward."

### A Telegraphers' Duel.

A dispatch from Charlotte, N. C., on the 11th ult., says: A remarkable affair of honor took place at Gastonia, between this place and Columbia, S. C., last night. The novel feature of the affair is that the insult and challenge were both given and the hostile cartel accepted by telegraph, and the combatants were both telegraph operators. Reginald de Fevre, a well-known telegraph operator in this place, in an irritable moment received an insult from John Cone, an operator at Greenville, S. C. Though the two men had never seen each other, De Fevre could not forget the insult. He has been considered one of the best natured men in the telegraph service, and was noted for the even-

ness of his temper under the most trying circumstances. But the Greenville insult was too much for him. Finally, after some bickering, they agreed to meet on half-way ground and fight a duel. The arrangements were completed for a meeting, and yesterday afternoon two telegraph operators in new dusters got off the train at Gastonia. They bowed frigidly to each other, and left for the hotel accompanied by friends. It was decided that instead of the pistol duel practice the parties should meet in an old field and settle the difference in man-to-man fashion by a square stand-up-and-knock-down contest. In order to prevent interference the hour fixed for the meeting was 1 o'clock in the morning. The moon was shining brightly when the two men, accompanied by seconds, met on the field. De Fevre was a light-weight, while Cone turned the scales at 170. After a close contest the heavy weight told and the Charlotte man was beaten. It was a hard fight, and the men were badly punished.

### Cleveland Chronicles.

To the Editor of The Operator:

SIR: Sickness has kept us from business for several months, and our ear had grown quite lonely without having behind it the wonted pen, but we rejoice in our ability to once more appear on deck and trust that the storm will not again drive us down in the hold.

During the past month we have visited some of our neighboring towns, where we met several of those with whom we had worked for years, but whose faces we had not before seen, and although we had formed in the album of our fancy a picture of each, we found the original in each instance superior to the picture, and in point of hospitality beyond our most sanguine expectations; and we hereby extend our thanks to those whose favors added to our pleasure while we were "innocence abroad." Prominent among them are Messrs. E. M. Boynton, the whole-souled and popular Manager of the W. U. office, Meadville, Pa.; J. M. Stinson, Manager, Greenville, Pa., and G. C. Gillis, Manager, Jefferson, Ohio.

On getting into our working harness again, we are like the buggy that stood in the barn all winter: rather rusty, but with a little usage will be as bright as ever. Looking about us, we notice many new faces, whose names are conundrums to us yet, but we hope to solve them in our next letter. A new feature of the office here is the "C. N. D." and Gold and Stock business, under the management of Mr. L. A. Somers, one of the veterans in the business, whose headquarters in the same capacity for many years has been the Cleveland Dock office. On and after June 1, and for sanitary reasons, the force here are obliged to es-chew tobacco, and, of course, must not expectorate as first-class men. This is a step toward morality. Who can suggest something else?

The American Union office, under the management of Mr. George H. Wadsworth, is still open, and so are our mouths, in anticipation of something dreadful to come, though down in the silent chambers of our hearts there is a hope that, whether we are ordered to report at the American Union office or the American Union boys come to us, we may all be amply provided for and everything blend harmoniously.

Messrs. C. F. Williams, formerly chief operator, and Geo. O. Smith, bookkeeper for the A. & P. Co., are among those provided for by the Western Union. Mr. D. L. Kaine, of the day force here, has resigned to accept a more lucrative position and be with his brother "Jim," at Kansas City. A few days since we dropped in to see Mr. E. G. Stevens, Manager general telegraph office N. Y., P. & O. Railroad, at 323 Euclid avenue, this city, and found him nicely situated. "Ed" is not only a genial gentleman, but an excellent operator. He is ably assisted by Mr. D. B. Campbell. Mr. Stevens still insists that the cipher of Stevens (— —) should take the place of the Morse cipher (—). The poet Lytton says: "Whom first we love, you know we seldom wed," but in the endeavor to supplant some other system in the place of Morse, we fear that he would learn that we have become wedded to our first love, the poet's idea to the contrary, notwithstanding. Mr. E. W. Baum, one of the owls of this office, has been presented with a fine boy, and is now looking up a name for him. Don't



load him down with a long cognomen, Ed., it would blight his young life. Mr. W. W. Sylvester, one of "ye old timers" in the telegraph profession, is private secretary to Mr. P. D. Cooper, Genl. Supt. N. Y., P. & O. Railroad. Mr. H. W. Jeffers, of the day force here, has been ruralizing for a few days, and comes back to us looking the better for a few breaths of country air.

We are indebted to Mr. P. C. Greenwell (Brutus) for taking up the chronicles where we left off, and to "Werner" for kind words, which inspire us with new hope. In our next chronicles we will strive to gather some news relative to business and business changes generally, and until then—well—  
"I. DUNNO."

### The Telegraph in Indianapolis, Ind.

To the Editor of The Operator:

SIR: The Western Union main office in Indianapolis consists in all of eight rooms, divided as follows: Superintendent, three; receiving and delivery departments, one; battery rooms, two; store-room, one, and operating room, one. The latter room is entirely too small and also poorly ventilated. The Manager states, however, that it is contemplated adding another good-sized room, which will greatly improve matters. They have seventy-three wires on the switchboard, six of which are city lines; five sets of quadruplex and five duplex; employ nineteen main batteries, consisting of two thousand four hundred cells, besides three hundred and fifty cells of local battery. The A. & P. office was closed March 19, and the A. U. April 15. All of the A. U. force are now with the W. U., Manager Sabold temporarily acting as one of the day chiefs. Following is the force: Mr. M. D. Butler, Manager; Mr. H. C. Sickles, Day Chief, with Messrs. F. W. Sabold and F. A. Moore, assistants. There are twenty-four operators on the day force. Mr. J. A. Fuller has charge at night, with a force of ten operators. A more brilliant and courteous corps would be hard to find. It will, no doubt, be a surprise to some of the craft, especially in the East, to learn of the immense amount of business done at this inland city. The following shows the actual number of messages handled during the months of April and May, 1880 and 1881:

April, 1880—City business.....	21,854
Repeated business.....	66,947
April, 1881—City business.....	29,629
Repeated business.....	93,205
First 25 days of May, 1880—City business.....	19,029
First 25 days of May, 1881—City business.....	23,508
Repeated business first 25 days of May, 1880.....	56,527
Repeated business first 25 days of May, 1881.....	90,122

Two press circuits are also worked almost constantly. This great volume of business handled by so small a force reflects very creditably upon the management as well as the operators, whose daily averages hover in the vicinity of 200 messages per operator. There are also eight branch offices in the city, the principal one being the Board of Trade, managed by Mr. Chas. E. Tweed. The others are located at the hotels, stock yards and the Gilliland Electric Manufacturing Company's factory.  
J. R. C.

### Indianapolis Inklings.

To the Editor of The Operator:

SIR: We have recently had the pleasure of a visit from the energetic general agent of THE OPERATOR, Mr. J. R. Calder, who during the few days he was with us succeeded in obtaining the subscriptions of nearly all the operators and clerks of this office, and of the various railroad offices in the city, as well as in appointing agents and correspondents at the numerous railroad headquarters located here. We trust that the operators in the various other cities Mr. Calder may visit will show the same lively interest in our representative paper.

We note the following changes since our last report: Mr. Morris Dougherty, recently arrived from Galion, Ohio; Mr. Chas. Banworth, from St. Louis, reported for extra duty on the 27th; Frank Farley also arrived from the West on the 28th; Mr. James P. Golden is expected to arrive from Columbus, Ohio, next week, and will be immediately added to the extra force; Mr. J. E. Ball left for Chicago on the 15th, where he intends making his fortune working extra; Mr. Mat. Leonard has gone back to his first love, the I., D. & S. Ry., and is now working at their headquarters in this city; Mr. Samuel Crull has con-

cluded that he can "O.S." trains better than handle commercial business, and has gone with the Penn. & Chicago R. R.; Harry Carlton, chief train dispatcher of the I. & St. L. Ry. has been confined to his room for the past week with pneumonia, but is again able to resume his responsible duties.

This office can boast of some of the oldest telegraphers in the country, including Supt. J. F. Wallick, Mr. J. W. Chapin, now with the Gold & Stock Co., Alfred Winder, all-night operator, and J. C. Wilson, none of whom have seen less than 30 years' service. Business has increased wonderfully in the past three weeks, so much so that we are compelled to "double up" forces night and day, and every man that shows himself around the office is "stuck" for a certainty.  
May 27, 1881.  
DUG.

### Milwaukee Melange.

To the Editor of The Operator:

SIR: The recent acquisition by the W. U. of the N. W. Telegraph Company is hailed as the beginning of an era of prosperity for the underpaid employees of the latter. In a recent interview, General Supt. Clowry, of the W. U., stated that the consolidation is an assured fact, the ratification by the Northwestern being a mere matter of form, as the principal stockholders were present at the time the lease was effected.

The contemplated changes incident to the new order of things will include the employment of more and better men, at salaries commensurate with their abilities, which will insure an improved service in all respects. This absorption is as joyfully greeted by operators as that of the American Union was deplored.

Mr. C. H. Haskins, the present General Superintendent of the Northwestern will, it is understood, devote himself exclusively to matters telephonic, in which he is already largely interested. The plans of Mr. R. H. Hankinson, the Assistant General Superintendent, located at Minneapolis, are as yet unknown. Everything is extremely uncertain regarding the expected changes at 89 Michigan, but it is supposed that the present efficient manager, Mr. A. Weller, will be retained, though it is probable that one or two chieftainships will be rendered unnecessary. It is rumored that there will be some changes made in the managements of certain prominent Western offices, but this is, of course, not authenticated. It seems quite evident however that, whatever is done, the operators will be benefited by the change. Among the office changes we note the departure of Mr. J. M. Marlet, for a visit to his Canadian home, and of Mr. O. C. Wells, resigned on account of ill-health. Mr. Chase, of Spencer, Ind., fills the latter's place, and Mr. McDermott, of Kenosha, is temporarily employed during the former's absence.  
OCTOPUS.

### A Popular Telegrapher Killed.

To the Editor of The Operator:

SIR: It is a sad duty to chronicle the death of any member of our profession, and sadder still when death removes from our midst one so universally admired for his brilliant genius and so ardently loved for his manly qualities as was Geo. B. Hunt.

Monday last Mr. Hunt left his home to attend to some business, after attending to which, while on his way to his post of duty he was killed by the falling of a derrick. The car on which he was riding caught a guy rope of a portable derrick standing in front of the Dorris Row, on Olive, between 11th and 12th sts., and pulled the heavy frame work off the derrick down upon the car, breaking down the rear canopy and crushing out the life of Mr. Hunt. His death was instantaneous.

The remains were taken in charge by the Knights of Pythias, of which order he was an honored member, and on Wednesday morning, after appropriate ceremonies, were conveyed to their last resting-place—that beautiful city of the dead—Bellefontaine Cemetery.

The fraternity in this city have subscribed nearly \$500 for the benefit of his widow, and the Pythian Knights have defrayed the expenses of the funeral. Mr. Hunt was about thirty-six years of age. He leaves a wife and two small children, aged respectively two and six. He came to St. Louis about five years ago, from Arkansas,

where he had been practicing law, and has worked here since, first with the W. U., then with the A. & P., and after that office closed he came back to the W. U. Aside from his ability as a telegrapher, he was a perfect gentleman and had hosts of admiring friends.  
X.

St. Louis, Mo., May 27, 1881.

### TELEPHONE DEPARTMENT.

The Peekskill (N. Y.) Telephone Company has been organized, and is about ready to commence business.

A whisper is no test for the capabilities of a speaking telephone. A transmitter that will not transmit a word of speech in an ordinary tone will frequently transmit a whisper perfectly well.

The Boston and Northern Telephone Company, a corporation operating under a license from the American Bell Telephone Company, and connecting by their wires many of the New England cities, have petitioned the Board of Aldermen of Lynn, Mass., for the right to lay wires under ground, and also to furnish electric lights.

The Hannibal Exchange has one hundred and forty subscribers, and is connected with New London, the county seat of Ralls County, twelve miles distant. Palmyra, fourteen miles distant will also shortly be connected with the Hannibal Exchange. The Exchange has the reputation in Hannibal of doing good service. They are having a new switch-board made by the Gilliland Electric Manufacturing Company.

The Gilliland Electric Manufacturing Company of Indianapolis will ship shortly complete outfits for telephone exchanges in Chili, South America. The Chilians are the most progressive nation of our southern hemisphere, and are closely adopting American methods and ideas. This company is now sending its work to all the countries of Europe, and expect to be patronized soon by India, China and Japan.—*Indianapolis News.*

According to a report from Vienna the first step towards the practical application of the invention of telephones has at last been made in the Austrian capital. The Vienna Local Telegraph Company has applied for and has been granted a concession to establish telephonic communication in the city. In granting the privilege the government has made two conditions—first, that the subscription should be as low as possible; and secondly, that telephonic communication should in certain cases come under control, as is the case with telegraphic communication. The first condition has been fulfilled already by the company intending to limit the amount of subscription to from 100 to 140 florins a year.

Mr. James Gamble, General Superintendent of the Western Union Telegraph Company at San Francisco, suggests that the telegraph might be used successfully in Arctic explorations. His plan would be to use light steel wire, weighing about twenty pounds to the mile, which, coiled on reels, could be hauled on sledges either by men or dogs over the snow or ice, paying it out as the advance exploring party went along, using telegraph or telephone as they saw fit. By this means the party would keep in constant communication with their base of supplies. As hard frozen ground, dry snow or ice is a perfect insulator, no poles would be required. Mr. Gamble is an experienced telegrapher, and his scheme should receive mature consideration. Mr. George Kennan, of Washington, who is an authority on Arctic exploration, says that this scheme is not feasible.

In Supreme Court Chambers, on the 21st ult., Judge Donohue, on the application of the Attorney General, granted a temporary injunction restraining the Metropolitan Telephone and Telegraph Company from erecting poles in Twenty-first street, between Fifth and Sixth avenues. This action, although in the name of the Attorney General, is brought in the interest of the property-holders on the street named. An order directing the defendant to show cause why the injunction should not be made perpetual was granted by the same judge. The claim of plaintiff is that there is no authority for maintaining poles where they encumber the street or become a nuisance, and that the proper place for such wires is under ground. Defendants say telephone



wires cannot be run under ground, and the reply of plaintiff to this is, that if they cannot run under ground they cannot run anywhere.]

The Merchants' Telephone & Telegraph Co., main office at the Union Depot, Kansas City, Mo., is organized under the laws of the State of Kansas and under contract with the American Bell Telephone Company. This company propose to build telephone lines connecting interior towns, county-seats and villages with their nearest railroad station, connecting stations with each other and with important terminal points; also to establish exchanges where the business will warrant it. Exchanges have already been opened in the following cities in Kansas: Emporia, Lawrence, Ottawa, Olathe, Fort Scott and Wichita, and it is expected that connecting lines between Kansas City and Leavenworth, Kansas City and Atchison and Kansas City and Topeka will shortly be built. The following are the officers of the company: Wm. C. Alberger, President; J. D. Cruise, Secretary; P. W. Bossart, Superintendent.

Mr. T. G. Ellsworth, manager of the John street office of the Metropolitan Telephone and Telegraph Company, of this city, has patented an improved telephone central office system, the principal object of which is to facilitate connection between wires of telephone lines in a telephone central office, and to afford means for making such connections rapidly and accurately. Ordinarily in telephone central offices mistakes and delays in connecting and disconnecting the wires of communicating parties are of frequent occurrence, for the reason, among others, that the operator at the telephone cannot conveniently, or does not himself, connect and disconnect the wires, but gives directions to others to do so; hence result much noise and confusion, and consequent misunderstanding and forgetfulness or neglect of duty.

To avoid these difficulties Mr. Ellsworth has devised a system involving the use of novel switch connections and of novel telephone stands, and their peculiar arrangement relative to each other, whereby each telephone operator is enabled easily and without delay to connect and disconnect several communicating wires that are connected with his instrument.—*Scientific American*.

The factory of the Gilliland Electric Manufacturing Company is situated in the suburbs of Indianapolis, but connected with the Telephone Exchange of that city, besides having a branch office of the W. U. Telegraph Company, the wire being put in expressly for the G. E. M. Co.'s business. Several recent heavy orders, both from the foreign and domestic trade, will keep the factory very busy for some time to come. They, however, have improvements in view which will afford more room and facilitate the filling of orders. The extensiveness of the works can be judged from the fact that the employes number over one hundred and fifty, all having the appearance of being skillful and intelligent, an hypothesis which the well-known character of their goods certainly confirms. Mr. E. T. Gilliland, the General Manager, and his brother, Mr. J. F. Gilliland, Superintendent, heartily enter into all the enjoyments and games of their hands, having provided for them base-ball grounds and croquet grounds, the latter being for the female employes. In a recent base-ball game the Mag-netos of the G. E. M. Co. defeated a W. U. picked nine by a score of 22 to 6. During the month of June an excursion has been arranged for the employes and their friends to Lake Manitou, some ninety-five miles north of Indianapolis.

A committee of the Philadelphia City Councils has reported favorably an ordinance granting privileges to the Bell Telephone Co., for erecting poles and stringing wires, under which that company will put up 2,000 miles of wire in the city. The company must, however, file bonds agreeing not to charge more than the rates set forth in the classes following:

Class No. 1.—Includes dwellings throughout the city, the price per annum, with two or more on one wire, shall not exceed the sum of \$40, and where any of this class desire the exclusive use of one wire, the price shall not exceed that charged in Class No. 2.

Class No. 2.—Includes all business men, firms and corporations with two on one wire, the price per annum to be charged for the first mile shall not exceed \$75, and for any distance greater

than one mile an additional sum not exceeding 30 per cent. per mile may be charged.

Class No. 3.—Includes all business men, firms and corporations having the exclusive use of one wire, the price to be charged for the first mile shall not exceed \$100 and for any distance greater than one mile an additional sum, not exceeding 30 per cent. per mile shall be charged; and

Provided, That in cases with an average of fifteen calls per day or more on a wire, special contracts may be made.

## DASHES HERE AND THERE.

The island of Jamaica has now 470 miles of wire, with 32 stations, and 35 operators—all females.

One hundred operators are now employed in the W. U. office at St. Louis, Mo., 20 of whom are ladies.

The advertisement of Messrs. Ordway & Co., merchant tailors, of Chicago, will be found of interest to many of our readers.

On Friday last the Faraday reported herself five hundred miles out on the ocean, with all on board well. The signals and insulation are perfect. She will proceed to London for the remainder of the cable.

A company has been organized in Boston to work the Brush electric light, and lighted up Scollay Square for the first time on Tuesday night, May 17. Arrangements are already completed to furnish with electric lights the Tremont House, Young's Hotel, the Crawford House and several drug stores. It is intended to keep the Scollay Square lights burning all night.

Mr. N. R. Young, manager of the Chattanooga, Tenn., W. U. office, sent 1,500 pounds of supplies to the Nashville office after the fire. There are several offices up this way that could not spare 1,500 pounds of supplies to a neighboring office in distress, owing to a *penchant* some superintendents have for "revising" the requisitions that are sent in.

Mr. J. Pettibone, of Baltimore, sent a message by the American Rapid Company to Washington. The message reached that city all right, but the messenger boy to whom it was intrusted for delivery got into a fight with another boy and lost the message. Mr. Pettibone has, in consequence, sued the company for \$10,000 for non-delivery.

The cable steamer "Dacia" has repaired the Key West and Havana Cable. The operation is a difficult one, owing to the strong currents and to the fact that cables lie in close proximity and cross each other in some places, besides being deeply imbedded in sand. More than ten tons resistance is necessary to raise the cable, which was 4 times grappled, and each time broke loose.

About twenty-five boys employed by the American District Telegraph Company, in Brooklyn, struck on the 16th ult. for higher wages and less work. The strikers have heretofore received \$3.60 a week, and have been compelled to work twelve hours. They demanded \$4 a week and nine hours' work; but their demands were not acceded to, and new boys were hired in place of the strikers.

Last year a treatise was issued on "Electricity and Magnetism" by J. E. H. Gordon, a Bachelor of Arts of Cambridge University. The work is reviewed in the *Journal of the Telegraph* by D. F. In view of the fact that the review in question is headed "A Physical Treatise on Electricity and Magnetism. By J. E. H. Gordon and B. A. Camb," the signature would seem to be not altogether an unfounded suggestion.

At the annual meeting of the American District Company in Philadelphia, on the 16th ult., it was shown that in that city the company has in service 506 telegraph call instruments, and 37 alarm instruments in dwellings; 799,068 telegrams were delivered and 217,353 received during the year; 222 messengers are employed; 4,789,920 circulars were delivered, and the present worth of the plant is \$393,938.02.

The Kawsmouth Electric Light Company, capital \$100,000, has been incorporated at Kansas City, Mo. It is working under franchises from the United States Electric Lighting Company (Maxim patents), and has introduced the light with success in Kansas City. S. T. Smith, Supt. K. P. Ry. is President of the company; W.

C. Alberger, Supt. H. & St. Jo. Ry., Vice-President, and Paul W. Bossart, Electrician.

At a meeting of the Socialists in this city, on the 21st ult., the following telegram was sent to the Czar: "Four thousand American citizens, in mass meeting assembled, protest against Hussy Helfman's execution. Let not the blood of this woman be upon your head." As the company will not accept "collect" messages to St. Petersburg, and as the system of red messages has not yet been extended there, the Socialists had to pay full rates on it.

An order has been issued prohibiting the operators of the N. W. Telegraph Co. from acting as newspaper correspondents. The W. U. some time ago issued a similar one to its employes. The reason assigned is that if an operator desired, when an important piece of news came in from a correspondent, he could, instead of sending at once to the paper to which it was directed, change its phraseology and send it first to the publications of which he was the correspondent.

The Signal Service Corps has a force of 500 enlisted men—150 sergeants, 30 corporals and 320 privates. The term of enlistment is five years. Pay ranges as follows per month: Sergeants, \$80 so \$98; corporals, \$65 to \$85; privates, \$58 to \$81. As a spur to efficient work, the head of the corps is authorized by law to promote two enlisted men each year to lieutenantcies. It costs about \$375,000 a year to run the bureau, aside from the pay of officers and enlisted men.

One night last month, some time between 11 and 12 o'clock, that part of London which extends from Blackfriars Bridge up Ludgate Hill to St. Paul's churchyard and down Cheapside to King and Queen streets was suddenly in utter darkness. This was the area illuminated by the electric lights on the Brush system. Something had gone amiss, but exactly what it was those in charge of the electrical apparatus could not discover. Finally the ancient gas connections, which had not been disturbed, were brought once more into use.

A dispatch from Europe reports that M. Camille Faure has discovered a method of storing up and compressing galvanic electricity, and that he has shipped a box of it to Sir William Thomson. A similar reservoir for electricity was said to have been discovered by an electrician in this city about two years ago, but it was not exhibited nor described. If electric energy can be stored up like water and drawn off as required for use, which seems from its nature as far as known to be impossible, the success of the electric light systems would be assured.

Mr. Edison says that this is an old invention, and that he himself, two years ago, patented and applied a method for using the Planté battery in connection with electric lighting.

Anastasia Morrissey arrived in this country from Ireland some months ago, and sent a dispatch from Castle Garden to her aunt. The dispatch was intercepted by two men who went to Castle Garden and informed the girl that they had been sent for her by her aunt. Something in the appearance of the men aroused the girl's suspicions, and she learned before harm befell her that they did not even know Mrs. Dwyer, and that they had sinister designs. A suit was commenced by the girl to recover \$1,000 from the Western Union Company for the miscarriage of her dispatch. The plaintiff, who is only 18 years of age, recovered a verdict of \$150.

## NEW YORK CITY ITEMS.

### Echoes From 195.

A little stranger has appeared in the household of Mr. D. Harmon, Jr.—a girl.

On Monday last Minnie Cooke distributed 706 messages on the Southern circuits in one hour. This is smart work.

Mr. Fred Cooke has resigned his position in the W. U. main office to engage in other business at Worcester, Mass. Mr. Cooke was a favorite in 195, his pleasant and genial manners having made him many friends.

Mr. W. D. Chandler has resigned his position at 195 Broadway, owing to impaired health. His new field of duty is in Cheyenne, Wyoming. During his stay in this city he made a very favorable impression, both as a telegrapher and a gentleman.

At 12 P. M., on the 20th ult., there were 25 cir-



cuits working direct between New York and Chicago. The former office was sending on 20 and receiving on 5 circuits. In addition to the regular business, not less than 150,000 words of special were exchanged.

The text of the New Testament was transmitted to Chicago on the evening of May 20. It consisted of 110,000 words, and was started on four wires at 5:30 P. M. At 6 P. M. eight wires were used; at 7:30 P. M. 16 wires, and at 8:45 P. M. 20 wires. It was finished at 12:20 A. M. This is considered, in many respects, the greatest feat ever accomplished in telegraphy. Mr. Morris Brick kept track of the numbers and attended to the orderly transmission of about 200 sheets on the various wires.

The spring games of the Western Union Athletic Association took place, as announced, on Thursday afternoon, May 19.

The first contest was a 100-yard dash, handicap trial heats, the winner to run in the messengers' final heat. There were four heats. The first was won by J. J. McKinnery in 13 $\frac{3}{8}$  seconds. The second heat was won by W. B. Richmond in 11 $\frac{3}{8}$  seconds. The other two were walk-overs by Hugo Wiese and A. J. Voyer.

The next was a walking contest of one mile. C. E. Davis was the victor, making the distance in 9m. 54 $\frac{1}{8}$ s. W. H. McLean was second.

Then came the half-mile run. Martin Durivan accomplished it first in 2m. 16 $\frac{5}{8}$ s. E. H. Nicholls was second. J. J. McKinnery started only and then fell out.

The messengers' race in uniforms; trial heats, the first and second to run in the end, then followed. This was half a mile. James Donahue won the first heat in 2m. 44 $\frac{1}{8}$ s., and James H. Dunn the second heat in 2m. 40s.

A mile walk, handicap, was won by G. Casey in 8m. 16 $\frac{5}{8}$ s. J. P. Brattens second.

The quarter-mile run was won by J. J. McKinnery in 1m. 11 $\frac{1}{8}$ s. Hugo Wiese was second.

The running long jump had but two contestants, McKinnery and Wiese. The former was winner, his longest jump being 18 ft. 7 $\frac{3}{4}$  in.; another jump was 18 ft.

In the messenger's final heat, James H. Dunn was winner, T. Ayres second and James Donahue third.

The one-mile run was most spirited. There were but two in the race—Martin Durivan and Thomas Marrin. Marrin led all the way till the last turn of the course, which was an eighth of a mile in length, and then Durivan passed his antagonist easily, and gained the race in 5 min. 19 $\frac{1}{8}$  sec.

A hurdle race of 220 yards, five hurdles to jump, was contested by J. J. Kinnery, Hugo Wiese and W. B. Richmond. The latter won in 30 $\frac{3}{8}$  sec. Wiese fell heavily near the last hurdle, and lay motionless. It was at first thought he had been seriously injured. A doctor who was present brought him round. He had fainted from the shock and exhaustion.

The tug-of-war on the programme was omitted. The first prizes were gold medals and the second silver.

#### Other City Items.

The picture gallery of the Union League club-house was recently illuminated by the Maxim light, without detracting from the harmony of color or richness of tint in the beautiful paintings.

Mr. Henry Van Hoevenbergh, electrician of the American Union Telegraph Company, has taken a leave of absence and is off in the Adirondacks, forty miles from the nearest town, superintending the erection of his big log hotel, which he calls Camp Comfort.

On May 2 Samuel Boyce, while beating carpets on the roof of the Stevens House, leaned against a chimney to which telegraph wires were attached. The weight of the wires had so weakened the chimney that, under the additional weight of Boyce, it gave way. Boyce fell with it and was killed. A Coroner's jury censured telegraph companies for using chimneys as supports for their wires.

#### PERSONAL.

Mr. William Wallace, of Augusta, Ga., has gone to Springfield, O., on a visit.

Mr. C. A. Garland has been appointed Manager of the Selma, Ala., office, Wm. Nettles retiring.

Mr. Frank A. Armstrong, Manager of the Western Union Company at Cincinnati, has resigned.

Mr. William F. Corbit, for many years connected with the Associated Press in Philadelphia, is dead.

It is proposed in England to confer a baronetcy upon Mr. John Pender, the famous cable manager and owner.

Mr. Arthur Doty, formerly of the Chattanooga W. U. office, has charge of the telephone exchange, same city.

Mr. S. B. Sheibley, of Chattanooga, Tenn., has left for New York, to rusticate through the East for the summer.

Mr. G. T. Williams, Superintendent of the Western Union Seventh district, with headquarters at Cincinnati, has resigned.

Albert E. Smith, operator for the F. W. & J. R. R., at Mosherville, Mich., will not be thirteen years of age until next September.

Samuel A. Munson, a wealthy resident of Utica, N. Y., and for some years one of the directors of the Western Union Telegraph Company, died on the 26th ult., in his 56th year.

A lady operator, who has had several years W. U. experience, will give large commission for situation in country office. Address, with full particulars, CONFIDENCE, care this office.

Frank Gould, telegraph operator, was struck by an engine at Forester, Ind., May 16, and dangerously injured internally. He was riding on the engine pilot and fell when getting off.

Any person knowing the present address of Miss Nina Hickok, formerly operator at Oxford, Mass., will confer a great favor by dropping a postal card with her address to "Operator, R. & A. R. R., Columbia, Va."

Emile Berliner, for the last four years an electrician in the service of the National and American Bell Telephone companies, sailed on Saturday, May 21, for England, whence, after a short sojourn, he leaves for his native city, Hanover.

Mr. H. C. Wilson, an old and experienced telegrapher, is superintendent of the postal telegraph service in the island of Jamaica. Mr. Wilson was at one time employed by the old "Electric" Company in England; served three years in Egypt, and some years in Pernambuco and Bolivia.

Mr. Jule P. Wooten, who resigned at Chattanooga some six weeks ago to accept a position with the Mexican Telegraph Company at Tampico, and was afterward thrown out of employment, has been reinstated and transferred to Vera Cruz, which gives him a better chance for the City of Mexico when opened.

Mr. J. K. Butler, of Stamford, Conn., has resigned his position as manager of the W. U. office at that place, after eighteen years' faithful service, to accept the general management of the Stamford and Norwalk Telephone Company, with which, however, he has been prominently connected since its inception.

Mr. Joseph H. W. Hoogs, of the Boston W. U. office, died at his father's residence, May 22, of consumption, aged 25 years. Mr. Hoogs gave up work about a year ago on account of ill health. He had up to that time been one of the best telegraph operators in Boston, and had hosts of friends, not only in the office, but along the whole length of the line.

INDIANAPOLIS, IND.—The first base-ball game of the season occurred May 21, between the Western Union nine and the Gilliland Electric nine, on the latter's grounds, near the Gilliland Electric Manufacturing Company's factory. The result was a victory for the Gilliland boys, in a score of 18 to 6. This was owing mainly to bad pitching on the part of the W. Us., their regular pitcher having sprained his arm in the third inning. They play again in two weeks, when a close game is expected.

The three daughters of Gardiner G. Hubbard, formerly of Cambridge, Mass., and well known to

telegraph men as the indefatigable promoter of the Government Telegraph scheme, have married foreigners. One is the wife of Professor Bell, the inventor of the telephone and the photophone, the second of Mr. Grossman, a Hungarian, and the third was married last week to Charles James Bell, of Leeds, England. The latter gentleman is the cousin of the telephone inventor, and is himself the inventor of an instrument for registering telephone messages.

Mr. L. A. Gobright, who was for many years the Washington agent of the Associated Press, died in that city on the 14th ult. He was born in Baltimore in 1816 and removed to Washington in 1834, where he always afterward resided. His connection with Washington journalism began almost with his removal to the capital, and he was one of the earliest officers of the Associated Press, which he served in a most responsible capacity until the 1st of July, 1879, when he resigned. The journalists and public men of nearly half a century honored Mr. Gobright with their confidence, and he never forfeited their esteem.

RICHMOND & ALLEGHENY R. R.—Your nice little paper has found its way on this line, and I think your readers would like to know what we are doing over here. This telegraph line was started last September, and we now have 227 miles of wire and 20 offices and will have about 10 more when we get the road through. We have Jno. Cakie, late of the R. & D. R. R.; Mell Kembrough, late of the R. & P.; Jno. Burgess of the Air Line, and Mr. Creamer, of the A. U. T. Co. The line is working very well, and we are all happy and read THE OPERATOR with pleasure.

VIRGINIA.

Mr. W. H. Mayer, formerly of the N. Y. Elevated Ry., is now very pleasantly situated at Topeka, Kansas, on the A., T. & S. F. Ry., having charge of their telegraph office at their shops. He gives our General Agent the following changes: Mr. H. M. Roach, formerly day operator U. P. Ry., Topeka, transferred to night duty, Wamego, Kans. (the terminal station of the Kaw River Division); Mr. W. A. Campbell, formerly night operator, has been transferred to day duty; Mr. Roy Connor, formerly nights, Lawrence, U. P. Ry., filling the position of night operator vacated by Mr. Roach.

#### MARRIED.

FISHER—STANLEY.—May 4, at the residence of the bride, Rossville, Kan., by Rev. G. H. Nickerson, Mr. Geo. Z. Fisher, manager at Wamego, Kan., to Miss L. E. Stanley.

HUDDLESTON—PERRY.—May 18, 1881, at the residence of the bride's father, Stevenson, Ala., by the Rev. John Cargile, Mr. Will Huddleston, night operator M. & C. R. R. Co., Stevenson, to Miss Kate Perry.

FAGAN—SCHUPPAN.—On May 11, at the residence of the bride's parents, Jersey City, by Rev. James Montgomery, Mr. George F. Fagan, Secretary's Office W. U. Tel. Co., New York, to Miss Bertha Schuppan.

JONES—KENNEDY.—May 18, 1881, at Clyde, N. Y., by the Rev. Mr. Reddy, of Syracuse, C. E. Jones, bookkeeper at the Clyde Glass Works, to Miss Mary L. Kennedy, of Chittenango, N. Y., for the last 6 years operator for the N. Y. C. R. R. at Clyde.

#### DIED.

PRINCE.—On Monday, May 23, Henry D. Prince, clerk and collector M. T. & T. office, 198 Broadway, New York, aged 31 years.

STONE.—May 11, in Chicago, of cholera infantum, Frank E., twin son of E. B. and Nellie D. Stone, aged 9 months and 9 days.

MURRAY.—At Kinzua, Pa., May 13, 1881, of pneumonia, Dana Ross, aged 6 months and 28 days, second son of Dan Murry, Manager and Lineman W. U. T. Co.

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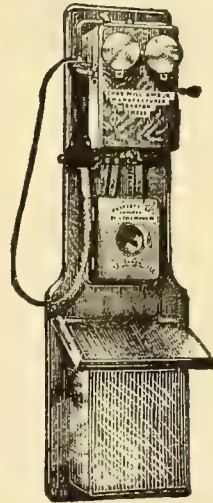
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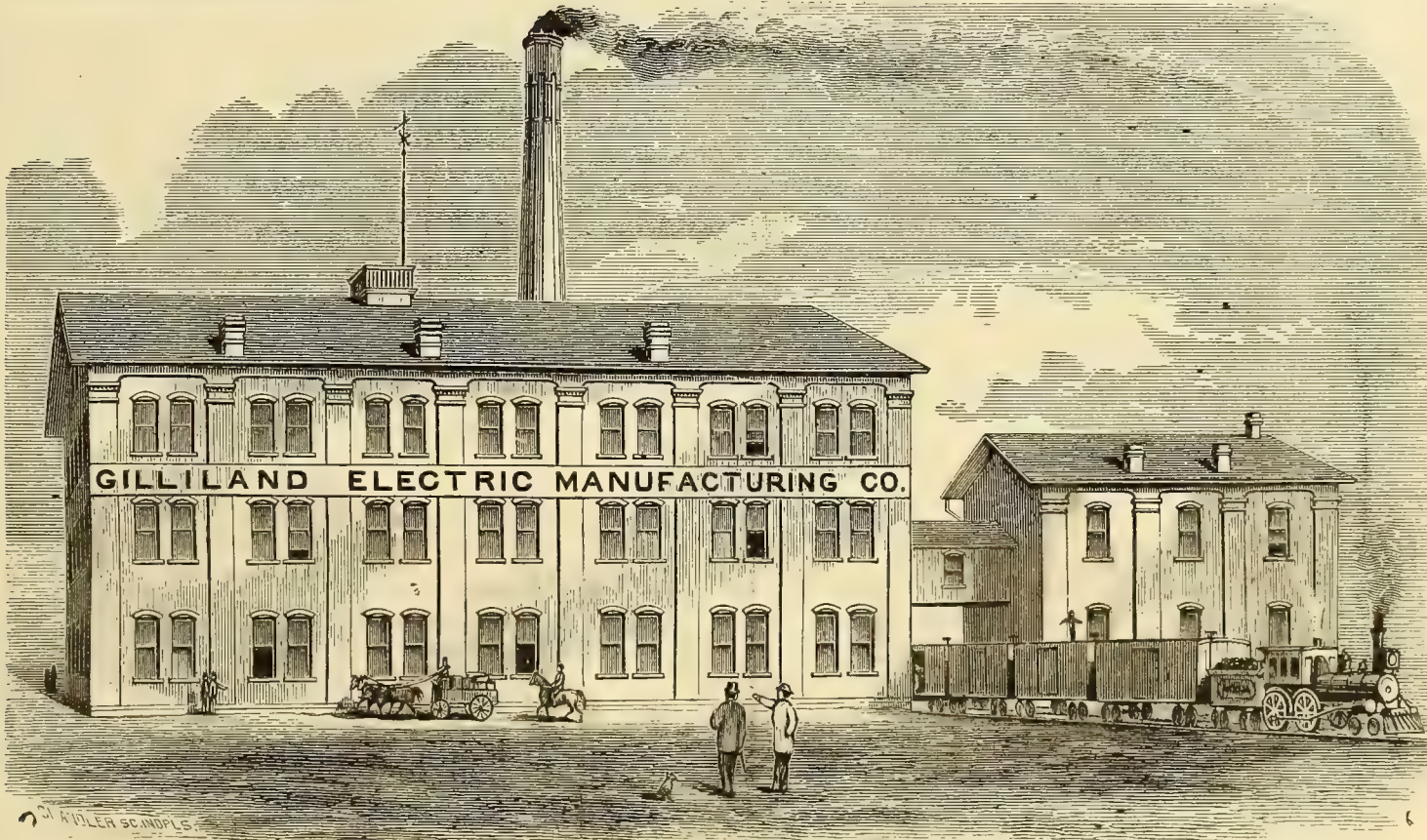
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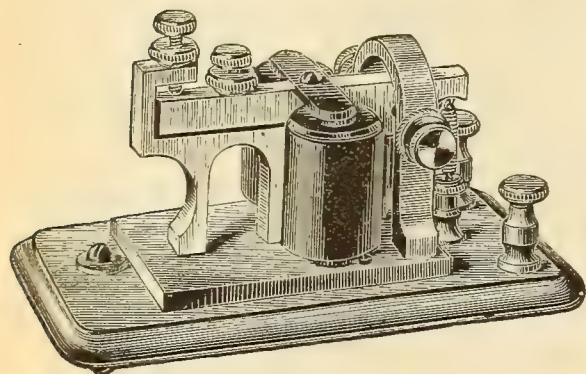
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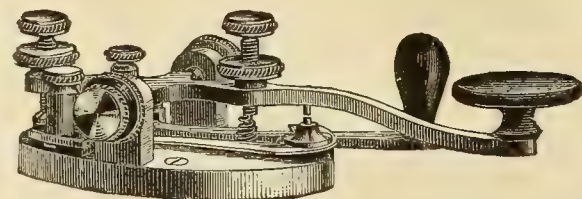
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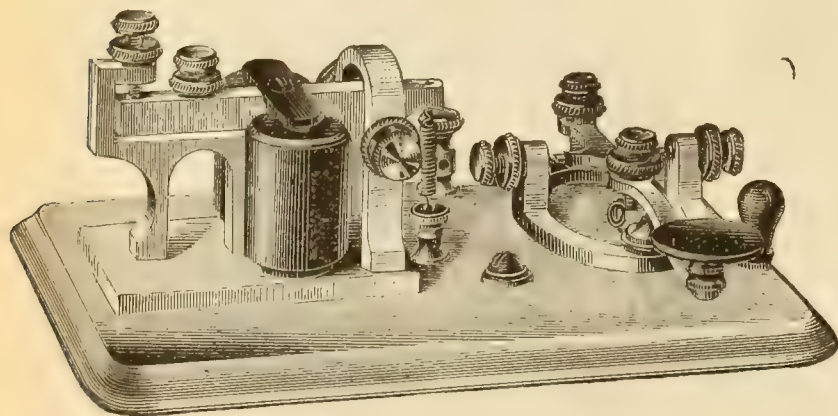
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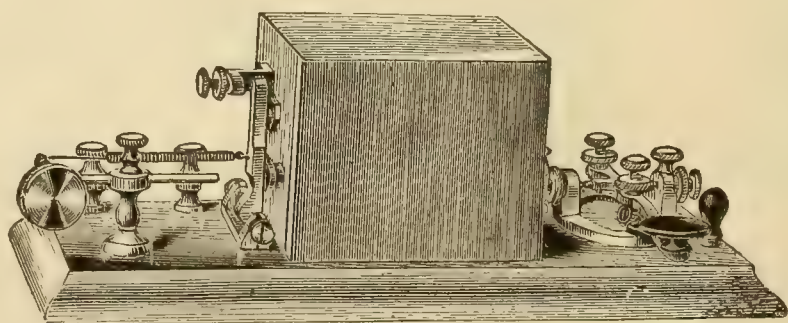
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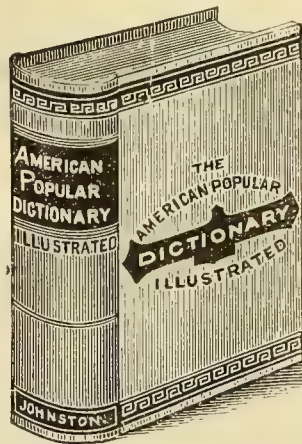
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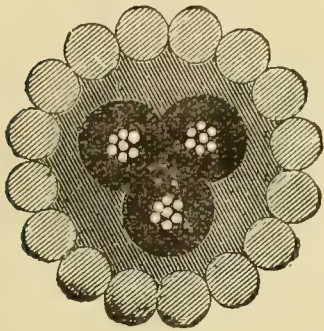
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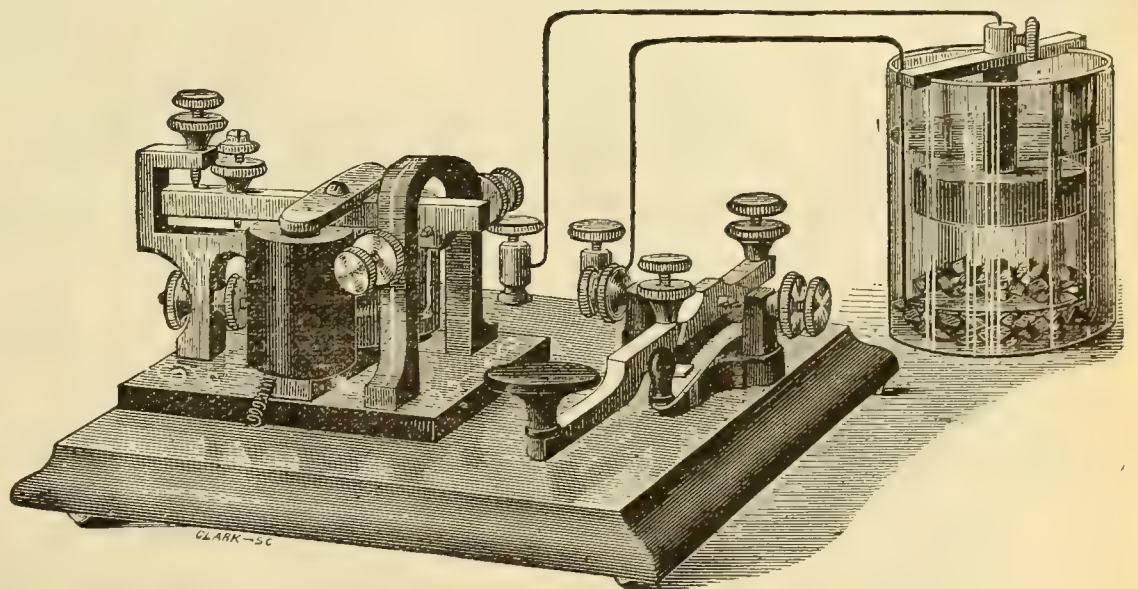
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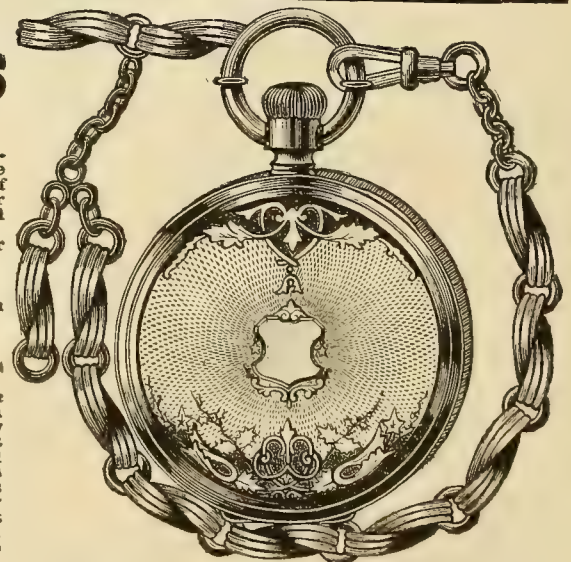
how pressing the order may be, until it has been thoroughly overhauled, regulated, and made to correspond with the standard time-keeper. Therefore, those who purchase of us have every right to expect a first-class time-keeper for their money; and they may depend upon it that we will make every exertion to meet their anticipation.

We claim the following merits for the Watches sold in our establishment, and for those sent abroad:

1. That they will not vary, if wound up regularly.
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values, and this being a composition, has no standard value, or we could not afford to encase the movements of the Watch with this Gold Metal, and sell the watches complete for that price, as the works are the same as in a genuine gold case.

**TESTIMONIALS.**—We submit the following extracts of letters from parties at a distance, whom we never saw, and of whom we knew nothing except that we dealt with them by mail and express. Those who desire to assure themselves of the genuineness of the testimonials will do well to address the parties. We have too many letters of this sort, from different parts of the country, to resort to the usual method of writing fictitious ones.

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HIRAM FORBES.

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I received your six watches all right the day before yesterday, and have sold them all but one. I am perfectly delighted

with them, and all those to whom I have sold them express themselves perfectly satisfied.

EDWARD HUGHES.  
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DEAR SIRS—I sold the Aluminium Gold Watch that I ordered of you some time ago, this day, for \$54.50. Will send for a dozen soon.

Truly yours, F. W. SALSBUURY.

THE LATEST.  
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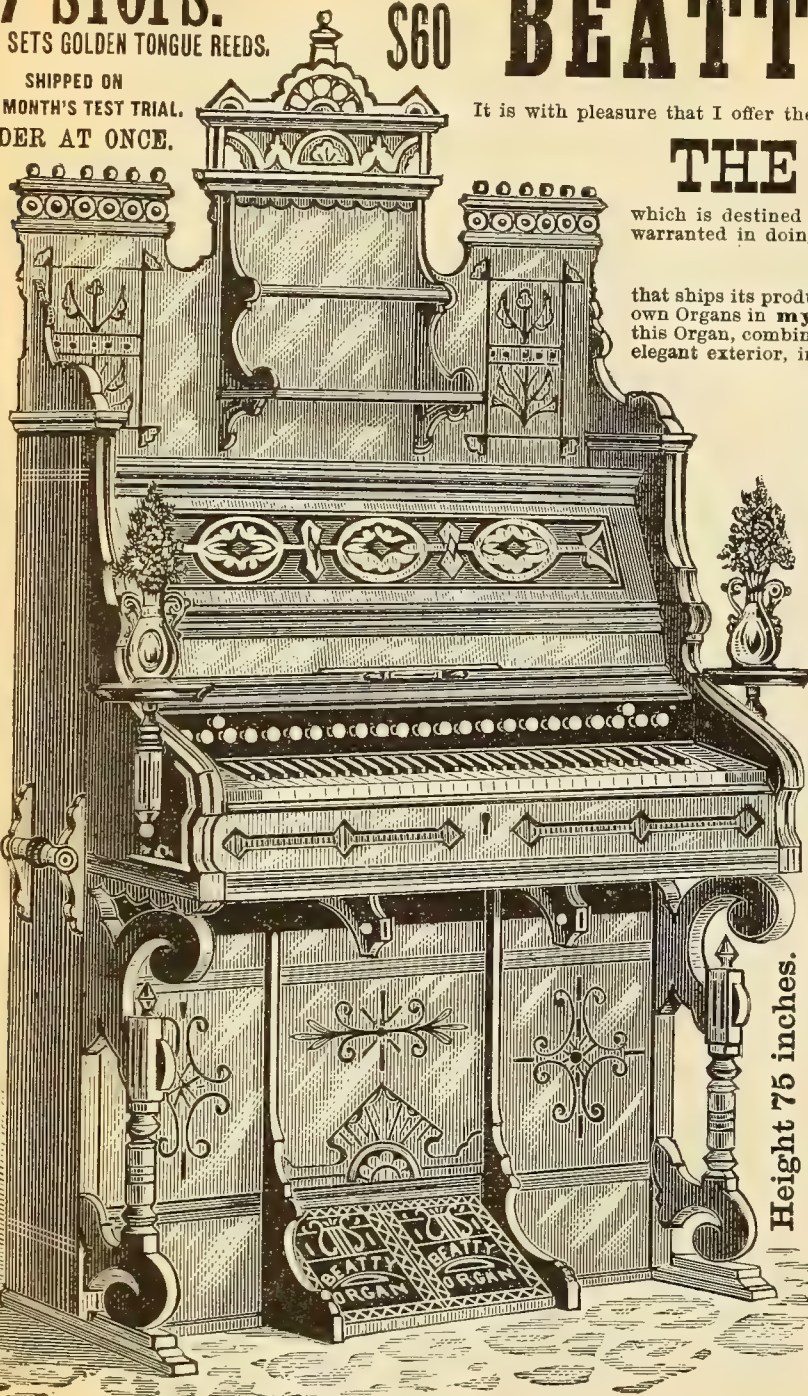
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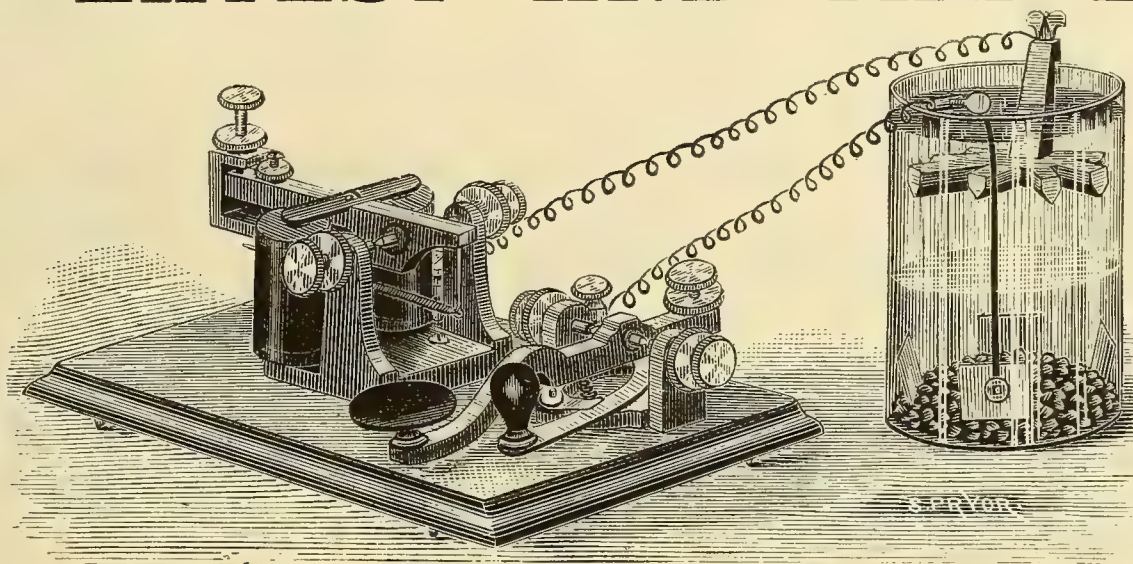
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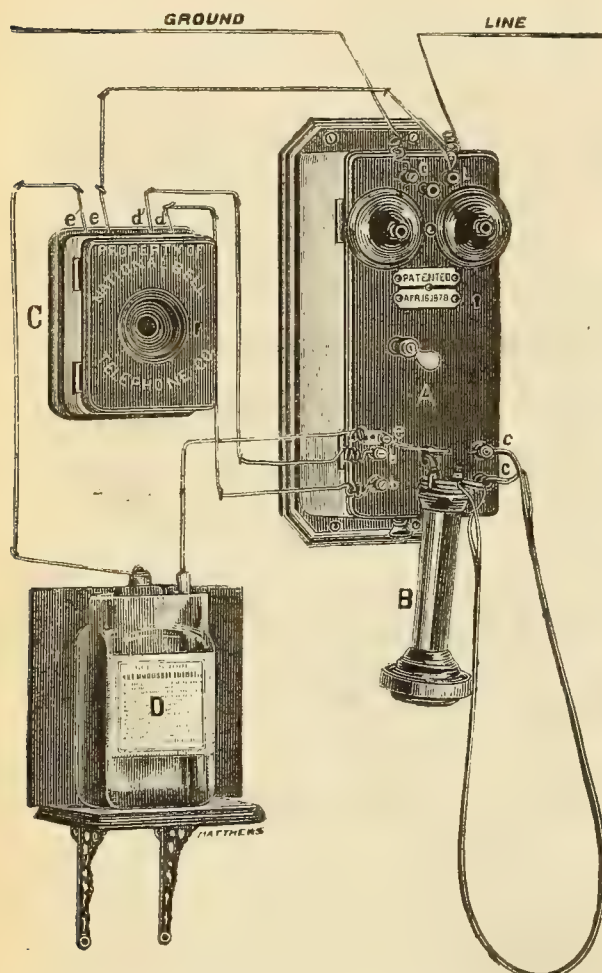
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This company desires to arrange with persons of responsibility for establishing

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in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

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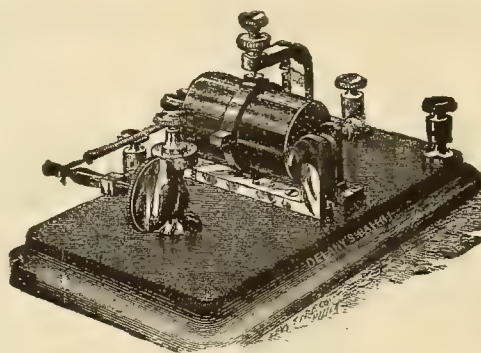
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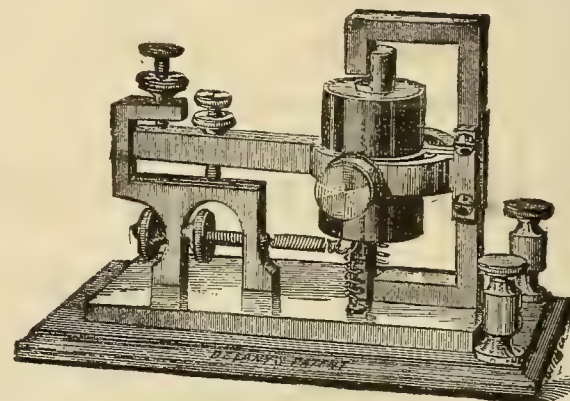
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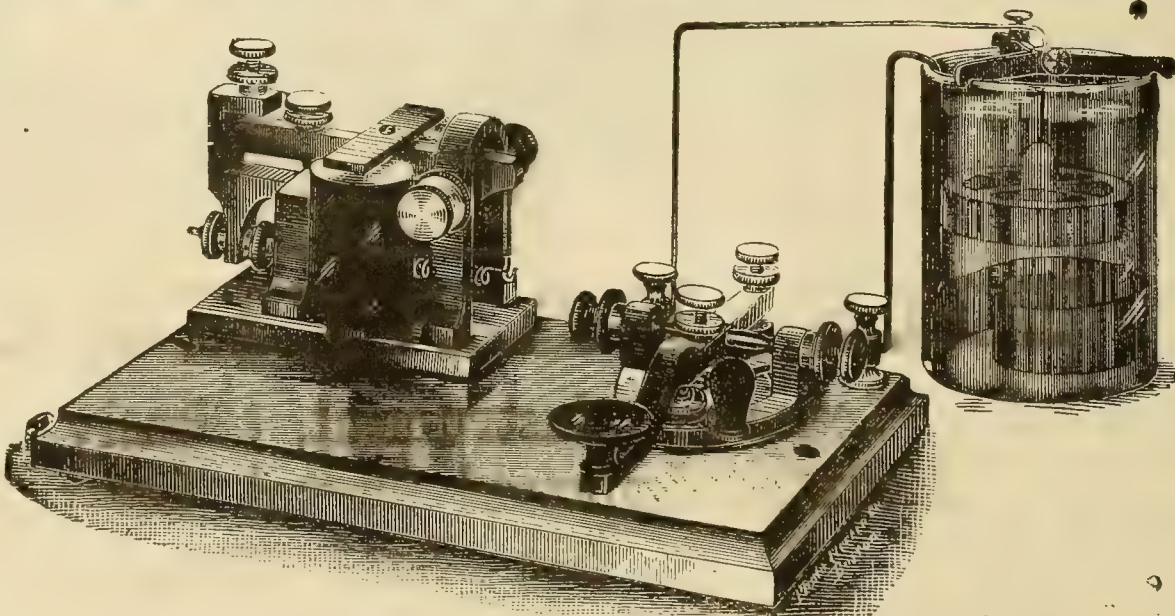
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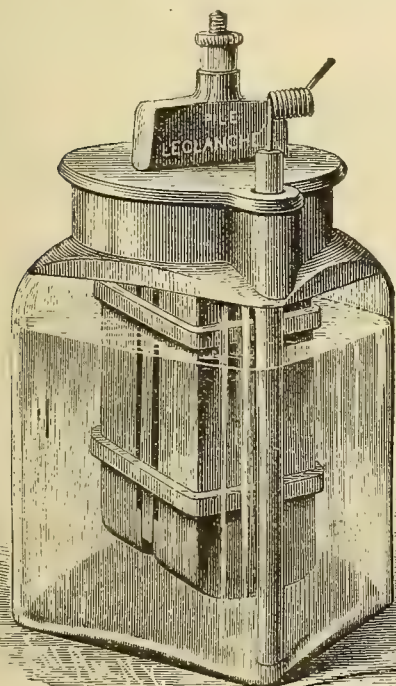
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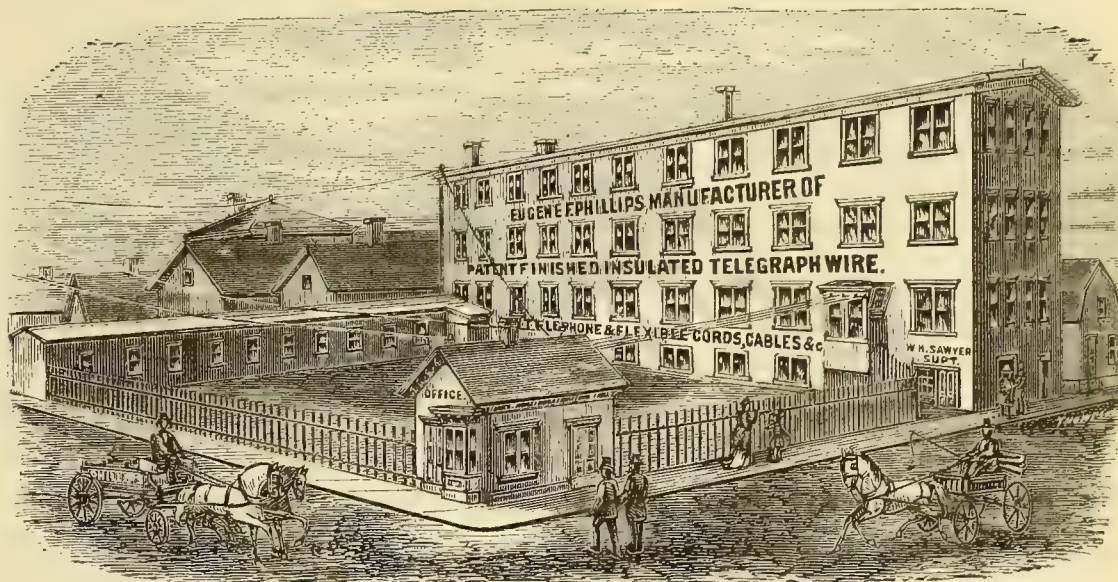
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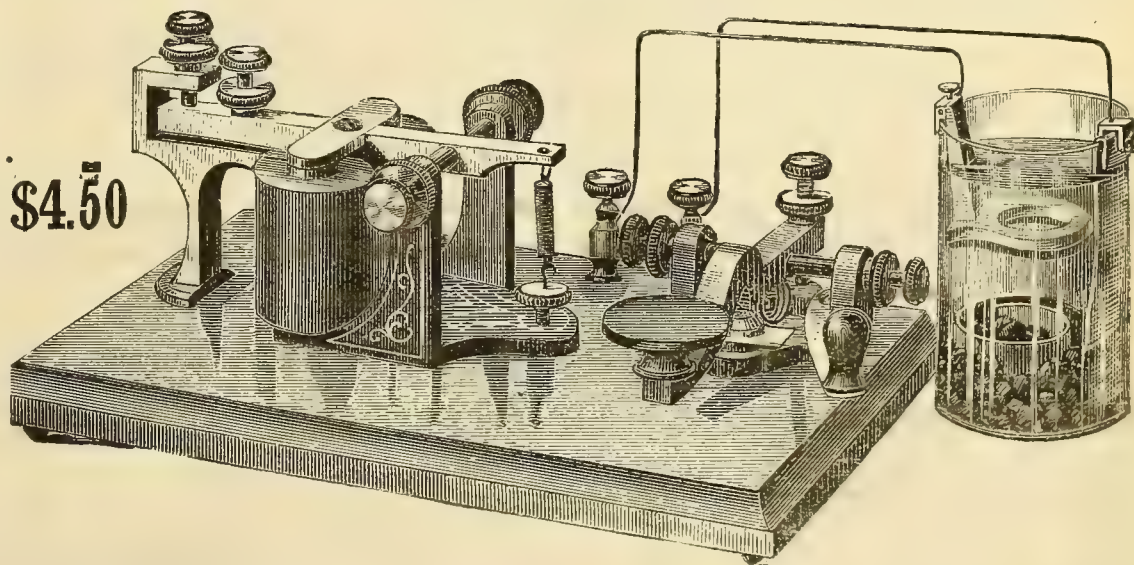
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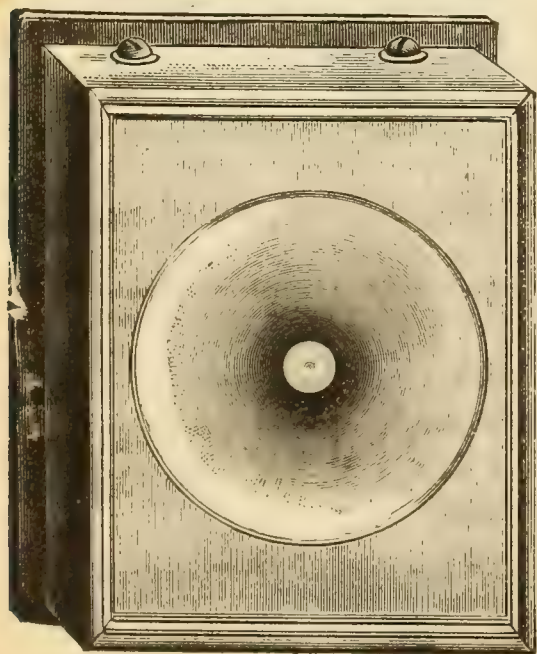
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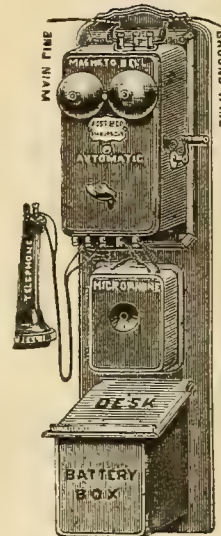
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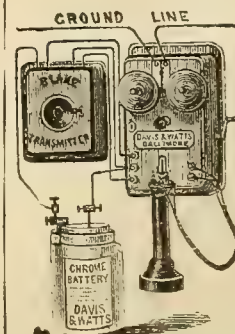
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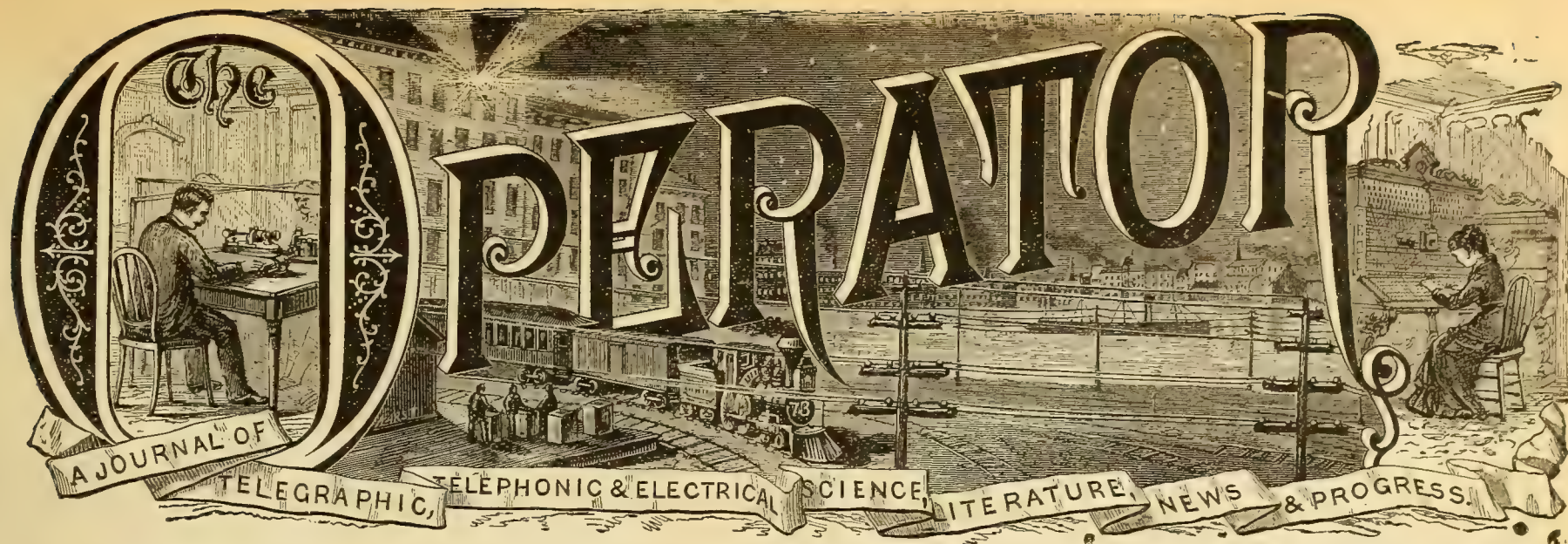
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VOL. XII.—No. 12.

NEW YORK, JUNE 15, 1881.

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### MORSE.

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A mortal tames that which you but defied,  
His bidding makes its subtle gleams abide,  
And lo! yet far more wondrous still, doth mould  
The thunder voiced tones, that erewhile rolled  
Their terrors 'long the murky storm path wide,  
Into a music language taught to glide  
As true as Mercury's fleet feet of old.

On thy benign and patriarchal brow  
Enwreathed lightnings lambient display  
A flaming crown of prism-like sparkling ray,  
Our great grown craft unto thee rev'rent bow,  
Our patron saint, Oh! Morse, we call thee now,  
And fame is thine, and immortality for aye.

FRANK C. PRESCOTT.

OAKLAND, Cal., June 5, 1881.

### The Ground and its Relation to Telephonic System.

(Concluded from last issue.)

Let none of our telegraph or telephone experts, possessed of "every implement and means of art, and twenty years' apprenticeship to boot," despise the day of small things and conclude that because *they* know all that is written here, and a great deal more beside, time and space are therefore thrown away. The object of this and similar articles is to furnish popular instruction for the thousands of the rank and file of our telephone men of to-day; the men who have to do the work, and who have had no chance for either twenty years' or even twenty months' apprenticeship at electrical work. Many exchange managers, also, and superintendents, have had no previous experience in the line they are now in, and will gladly hail even a small portion of the heaven which it is hoped will by and by leaven the whole lump.

The terminal ground will be first considered.

We have built our line. We are now connecting our bell and telephone, and the lineman, who has come from his last place with powerful recommendations, runs a light copper wire from the last binding screw of the bell to a lacquered bronze gas fixture, twists the wire, bared for three or four inches but not scraped, round the pipe once or twice, and leaves it. The telephone works, as what telephone will not; but it is in spite of the "ground," not in virtue of it. The manager, who has, we suppose, seen fire, wonders why it takes so much battery to work that line. He has all he can do to attend to the complaints of the unfortunate subscribers; but at length finds time to take a trip over the line himself, as he, out of the depth of his sad experience, suspects a bad connection. He passes along from station to station, coming in due course to the end, where after two minutes' scrutiny, he sees the cause of the "rotteness in Denmark." He

remedies it in the following manner: Sending for his lineman, he will have a stout wire run to the nearest *water* pipe. The water pipe, which we will hope for its own sake is iron (lead should never be used), is then filed or scraped clean and bright for at least two inches laterally, and a No. 16 or 18 copper wire scraped bright, and having a length of at least six feet, is carefully and tightly wrapped around the scraped portion of the pipe, each convolution close to the preceding one, until the whole of the brightened surface of the pipe is covered. The wire should be passed under several feet of the last convolutions, so as to pull tight, and enough left at the end, say eight inches, to make a good splice. This end is then spliced to the wire leading from the instrument; and for the first time in the life of our line it enjoys a good earth connection.

If both gas and water pipes are present, connect to both. Water, however, is always to be preferred to gas, for the reason that gas-pipe joints are made up in red and white lead, which act as insulators, and resist the passage of the current. If gas pipe is used, the ground connection must be made between the meter and the street. Water pipes are not open to this objection, because, being filled with water, there is always a pretty good conductor inside of them to pass joints.

Some prefer, instead of the connection just described (which, by the way, our experienced manager carefully solders before leaving), a screw clamp with a binding post for the reception of the wire. This is screwed tightly to the brightened pipe. We do not, however, advocate it, knowing the inveterate propensity of binding screws to work loose.

If our manager can find neither gas nor water pipe, he looks for the pipes attached to a steam-heater, and tries them. Very often they make an excellent ground. Very often again they don't.

But he has now finished the job and returns to the office, his man, if he is the right kind, knowing how to manage in future, and if he is the wrong kind, thinking to himself: What a heap of trouble and work thrown away.

A rather singular case of moral obliquity, which occurred some months ago, may be mentioned here, as showing how the plainest instructions can be readily misunderstood.

A new telephone exchange had been started in a small city, and the expert from an adjoining place had been over, and instructed the new telephonists in the rudiments. Among his other instructions, he said: "If you have to make a ground where there are no pipes, you

must dig till you get to damp ground, and there bury a plate or rod." The line was built but wouldn't work. You could talk over it, but you couldn't ring over it.

An inspector visited the exchange and was appealed to in most pathetic terms to make the line work.

Inquiring concerning the nature of the ground, he was told that the ground wire was certainly perfect, that they had dug a deep hole, and then driven into that a twelve-foot rod, and that they had filled it with water; but still the line would not work. The inspector went, however, to look at the terminal. Taking the ground wire from the binding screw, he found that he could taste the current quite strong. He then went to see the ground, and found that a new way had been discovered. The twelve-foot rod turned out to be a pipe with a water-tight cap screwed on the lower end. They had, as they said, dug a hole and then driven the pipe in, but the ground was dry and rocky. To finish the job, then, they had brought water and carefully filled the water-tight pipe.

Coming now to our central office ground connections, we will uniformly get the best results by attaching the ends of our circuits to a No. 4 or 6 copper wire, carefully cleaned, and soldering every connection. This large copper wire must be connected by as many routes to earth as possible, using invariably as much surface as can be, so as to reduce the resistance of the ground. That is, connecting all our large wires to which the circuits are attached to one still larger, that, in turn, should be branched off; one branch fastened by about six inches of convolution to the water pipe, and soldered; another similarly attached to the gas pipe; another, perhaps, to the steam pipe; another to the building itself, if it be iron, and so on.

In this connection it is, perhaps, well to describe an experiment, which is often tried, but which, by the very nature of things, can never succeed.

It is, briefly, to loop an electro-magnet into the common ground wire, so that at night, or in cases where an operator cannot give the exchange his entire attention, this magnet might act when a call came in on any circuit, should attract its armature, and ring a local bell.

Any practical electrician will at once see that, owing to the infinitely small joint resistance of the combined circuits uniting in the ground wire, no signaling instrument can be expected to work when so placed. To the amateur, however, the idea appears so promising that he



must try it himself before he will be satisfied that it is impracticable.

The foregoing remarks apply equally to the lightning arrester ground wire, which should be made of the largest copper wire that can be procured.

The earth wire at an intermediate station on a telephone line should never be dispensed with. It should be used in connection with a local lightning arrester; and wherever the secrecy switch is used, the same wire may be utilized to work it. It may be constructed in the same general way as the ground at a terminal station, but is not so important, inasmuch as in this case only one individual is concerned, and in a terminal station the entire line is interested.

In the case of a temporary ground wire used to complete the line circuit on one side of a break, no particular care is necessary. Several turns around a brightened gas or water fixture will usually answer very well to work with, until the omnipresent wire fiend repairs the line.

Coming now to the listening ground, it has been found that when two short lines are connected through the central office for conversation, it is not necessary at all times to insert the instruments of the controlling operator into the circuit, but that the necessary work can be done by tapping the said lines with telephones connected to an earth branch. This works well when the lines are both short; but if they are long, or especially if one is short and the other long, the ground branch is found to carry away too much of the current, and the conversation becomes indistinct.

If it is impossible to loop the instruments in such a case, a coil or other high resistance should be inserted in the circuit of the ground branch, as an equalizer; as high as 10,000 ohms will do no harm.

The trouble "ground" needs no comment in this article. A separate article is needed to do it justice.

Only two more remarks seem to be here necessary.

First. When several trunk lines are used for the operation of telephones between two trunk stations, such, for example, as two cities, they should, if possible, each terminate at a different ground; because when they all run to the same ground, conversation transmitted on one wire often leaks past the ground wire and returns on the others, thus causing what is popularly, but in a great measure erroneously, known as "induction."

Second. Never, if possible, ground within a hundred feet of any place where an electric light wire is grounded.

Lastly. We repeat once more that in all cases and at all times too much care cannot be taken, nor too many precautions employed, to make a ground connection perfect. In this matter it is impossible to gild refined gold or paint the lily.

#### Notes and Queries on Electricity and Electro-Magnetism and their applications.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 130. What are the necessary parts of every line of telegraph, or telegraphic circuit?

A. In answering this question we shall be assisted by remembering what is the work required to be done in electrical transmission.

This, we shall see, may be divided into three heads. First. To generate or develop the electricity in sufficient quantity and of the necessary strength to do the work of the circuit. Second. To be able to transmit the electricity to

any required distance without losing any serious amount by the way. Third. To cause it, on its arrival at the distant point, to produce some sensible results; in other words, to record or deliver its messages.

To accomplish these results, then, it is necessary to have in each telegraphic circuit

First. A generator of electricity, which in nearly every case is a galvanic battery, but which may be, and sometimes is, a magneto or dynamo-electric-machine.

Second. A conductor of electricity between the stations, consisting usually of an insulated wire stretching from one terminal station to another, and ending in the ground at each terminal.

For practical purposes, the earth is regarded as a return wire.

When the line is a short one, a return wire is often actually used, and is indeed preferable, as the earth connections frequently interpose a higher resistance than a short return wire.

Third. At each station, apparatus to render the current evident to the senses. That is, instruments wherewith to receive the signals, and to interpret them, and corresponding instruments by which they are transmitted.

These elements, *i.e.*, the battery, the line wire, the transmitting and receiving instruments, at each station, and finally, the earth, compose the telegraphic circuit.

Q. 131. In a Morse telegraphic circuit, how are the batteries usually disposed?

A. It is usual to place half the battery at each end of the line, because, as all lines are more or less liable to defective insulation, such an arrangement tends to give better results on the whole than if the battery power were all at one end. If the battery were so placed, and the insulation at all imperfect, the working current, on account of the leakage, would be much weaker at the distant end than at the battery end.

Q. 132. How may the conducting wires of telegraph lines be classified?

A. They may be divided into three great classes, *viz.*: aerial, subaqueous and subterranean wires. The aerial lines may further be subdivided into those supported on poles and those on house top fixtures; the latter being chiefly employed in our large cities.

Q. 133. Under what three heads may all materials for the construction of the line be classed, the line here and henceforth to be understood as the "conductor," regarded as set apart from the battery and instruments?

A. In the construction of a line of telegraph, all the materials employed may be comprised in one or the other of the following three heads: Poles, or other supports; wires and insulators.

Q. 134. Give some details concerning the choice and setting of poles.

The poles used in this country are chiefly of white or red cedar or chestnut. Red cedar is the best and the most unsightly, though chestnut is the most frequently used, especially in the Atlantic and Middle States.

Poles should in all cases, when cut down, be cleared of all branches, stripped of their bark, shaved smooth, and then stacked for some time in such a manner that the air can freely circulate among them, so that they may be well seasoned.

This is too often neglected, and poles are frequently set as soon as they are cut and trimmed. Very little is done for the preservation of poles used on American lines. The European telegraphs are far ahead of us on such processes. In England, the poles, before being set, are treated with solutions of metallic salts, which, being introduced into the pores of the wood by different processes, combine with the sap and prevent decay.

Poles should not be less than twenty-five feet long, nor less than five inches in diameter at the top. Their length must necessarily depend upon the number of wires they are to carry, but on the majority of trunk routes the length varies from twenty-five to forty-five feet. Except when passing through cities or towns, they are rarely painted; although if such a practice was universal, it would conduce to their longevity.

They should be set at least five feet deep wherever practicable. The hole they are set in should be kept as narrow as possible, and perpendicular at one side, so that the pole will at least have one side of solid earth. When the earth is replaced, it should be well tamped down

after each few shovels are put in the hole, and moderate sized stones may be tamped in, close to the pole.

All the cross-arms required should be attached before the pole is set, in order to save labor. The ordinary practice is to place them all one side of the pole. The spaces cut for their reception on the side of the pole are called the "gains."

In some cases cross-arms are not used and brackets are then employed, which are spiked to the pole, some on one side and some on the other. It is a frequent practice also to bore a hole in the top of the pole and insert a pin which will carry an insulator, so that one wire may be strung on the top of the pole. Whenever this is done, an iron ring, a little smaller than the top of the hole, should be heated red hot and slipped over the end of the pole, after the pin is driven in, to prevent the smaller end from splitting.

The distance between the poles varies with the nature of the ground and must be left to the judgment of the constructor. But the number of poles to the mile will average about thirty; sometimes increasing to forty and sometimes, on a straight and level road, decreasing to twenty. In this connection, it may be well to observe that the fewer supports there are, the better the insulation, as each pole forms a branch circuit (of high resistance, it is true, but still a branch circuit).

In setting poles round a curve they should be made to lean back against the strain of the curve and should also be firmly guyed.

Q. 135. Give information relating to the attachment of cross-arms?

A. Cross-arms should invariably be formed of white pine, well seasoned. They should also always be planed, beveled off, at the upper corners, and well painted. The length, of course, varies with the number of wires to be attached, while the ordinary size is four inches by five.

In regular telegraph work, the cross-arms are longer than in local or city lines. On a trunk line, a cross-arm for two wires is about three feet long; for four wires, five feet six inches, and for six wires, seven feet six inches; while the distance between the insulators from centre to centre is generally about twenty-two inches.

No such magnitudes are used on short private telegraph or telephone lines, the cross-arms being much shorter in proportion, and the insulators placed much nearer together. The cross-arms are fastened to the poles with either a pair of stout spikes or with bolts and nuts. The latter is preferable. All cross-arms should be fitted with the pins and insulators before the pole is set up.

T. D. L.

#### Possibilities; or, the Future of Electricity.

While we are waiting to see or hear of new developments in electrical science, would it not be well for us to study what the future should or will be, and thus open a field for the genius to work on?

Each day brings to our minds something that would benefit or improve this and that. These thoughts carefully preserved would, in a short time, develop others, and so on, until one discovery after another, "probably scarcely dreamed of now," would be made.

The operator while on duty has occasion daily to notice room for improvement here and there. How few of them think that an occasional thought in this direction might be of great benefit toward the advancement of this particular branch of science.

Would it not be better for every one of us to make more of a study of electricity than to be capable of merely handling it mechanically?

The different journals of telegraphy bring to us reports of the discovery of this and that. Who are these inventors? They are those already noted in this and other countries for the many improvements their inventive genius have wrought. Rarely do we hear of a really useful invention from an apparently unknown in the telegraph profession.

A few minutes' thought each day as to what would improve or be of great service, would soon bring many ideas to the mind. These carefully noted and experimented on, might prove to be



of great value. If our unoccupied time was used in this way, and the results published in THE OPERATOR, it would certainly be interesting to many of its readers.

The field for improvement and uses of electricity is endless. Only a few years ago the thought of talking so that the human voice could be heard and even recognized several hundred miles away, seemed very foolish and impossible. Now we say there is nothing impossible. Let us read carefully the following and see what can be added to the future of electricity:

We will not only hear by telegraph, but we will see as well.

We will be able to see and hear the proceedings in Congress and the various Capitols, also in theatres and other places of amusement; even base ball games will be witnessed by thousands many miles away.

Machine shops and other manufacturing establishments, railroad trains, steamboats, etc., will be run, heated and lighted by electricity.

We will have telegraph offices on railroad trains and steamboats for the accommodation of the traveling public.

Conductors of trains will be able to talk with and receive orders from their head officers while running at the rate of one hundred miles per hour.

We will be able to take pictures by telegraph.

We will telegraph and talk a great distance without wires.

We will be able to talk from house to house—all included in our rents.

We will see electricity take the place of steam, wood and coal.

We will be able to talk with foreign countries, even to the North Pole.

We will do away with telegraph and telephone lines entirely.

Which shall we have first?

L.

#### Aphorisms for Telephone Exchange Managers.

Answer calls promptly.

Answer calls quietly.

Ring up subscribers not more than three times. If they do not answer then, tell your inquiring subscriber that Snooks does not answer. When your subscribers realize this, they also will become accustomed to respond as promptly as they expect you to.

When your subscribers are connected, cut your own remarks short. Don't attempt to boss the job.

When you think your patients have got through, listen before you speak. If you have got among your operators a "hello fiend," caution him or her three times; then if he or she persists in thus flying in the face of Providence, let him or her be eliminated. Your subscribers will appreciate it.

Keep a close watch for zealous operators who cut off too promptly. There are those who conceive that "cutting off" is their whole duty, and that making connections is merely a subsidiary or preparatory operation—a sort of electrical side-show.

Don't allow your operators to receive and talk away complaints. If an aggrieved subscriber has anything to say, let him say it to you. Instruct your operators accordingly.

When you receive a complaint, attend to it then and there. A stitch in time saves nine, and a prompt action will often both save you a subscriber and make you a friend.

When a subscriber abuses you in unmeasured terms for something you can't help, however great the temptation, don't jaw back. Remember, he is a portion of the income of yourself or your employer. Under the circumstances, a still tongue shows a wise head.

If you accidentally find out that the apparatus of any subscriber is out of order, no matter how small the trouble, have it fixed right off, though

you have to do it yourself. Don't wait for a complaint.

Test your wires every morning, by calling up the last subscriber on each wire and talking to him. If you find trouble, send your lineman to remove it at once.

Don't lose your head in the press of business, nor allow your operators to lose theirs.

#### The Telegraph Suits.

On the 1st inst., in the Superior Court, before Judge Truax, a final disposition was made of the case of William S. Williams against the Western Union Telegraph and Union Trust companies. It had previously been agreed between the counsel that upon the return of Mr. William H. Vanderbilt from Europe he should be examined as a witness for the plaintiff, and on that day Mr. Vanderbilt appeared. His testimony merely corroborated that already given by Mr. Gould and others. This concluded the case, but no decision has yet been rendered.

During the progress of this suit Mr. Williams procured a Chamber order commanding those companies to exhibit to him their books, which order the Special Term vacated and annulled. From this decision Williams appealed to the General Term of the Supreme Court, which on the 6th inst. refused to compel an examination of the books, with costs against Mr. Williams.

In the Hatch case Judge Truax, on the 6th inst., ordered the summing up to begin, and after that he took the papers and briefs. It is understood that he will decide the Williams and Hatch cases at the same time.

Meanwhile, as rumor says, Mr. Gould has obtained in New Jersey a charter for a telegraph company, and, if the decision in the pending litigation is unfavorable to him, he will buy or lease for his new company all the property and franchises of the Western Union, American Union and Atlantic & Pacific. In this new deal the old Western Union will receive 148½ of the new stock for 100. In this way the legal embarrassments that are now being thrown in the way of his consolidation will be avoided, and Western Union stockholders will get their scrip dividend of 48½ despite Mr. Williams and Rufus Hatch.

The motion of the French Cable Company for and injunction against the Western Union Telegraph Company, restraining it from interfering with the contract of the plaintiffs with the American Union Telegraph Company, was reopened on the 3d inst. on the reamended bill of complaint before Judge Blatchford, in the United States Circuit Court. The argument was continued next day by Gen. Swayne, who held that the only relief possible for the plaintiff was in the shape of damages or relief in equity. The business of the plaintiff had not suffered by the consolidation, for the cable messages that had been sent by the plaintiff company were as many in number now and as valuable as formerly. He said there was no ground for enjoining cables not yet laid. Senator Edmunds made the closing argument for the cable company, contending that while the American Union could transfer its property, it could not dispose of its obligations to the plaintiff, and therefore it had no right to close any of its offices. Judge Blatchford took the papers and reserved his decision.

#### Telegraphers' Criminal Forgetfulness.

At Bear Swamp Switch, near Trenton, N. J., on the 30th ult., a train on the Pennsylvania Railroad, going at the rate of 45 miles an hour, was switched on to a side track where a freight train was standing. Two people were killed and several injured. John R. Sutphin, the operator, who appears to have been out in the woods gathering magnolias at the time, ran away when he heard of the frightful consequences of his negligence. The coroner's jury found that the accident was due principally to Sutphin's carelessness, and also, very properly, censured the

parsimonious management of the Pennsylvania Railroad for not supplying sufficient and competent force, it being well understood that while that company pays its operators less than is paid to common firemen in the navy there can be no security of life or limb. The verdict might also have censured Superintendent James McCrea and Chief Ettinger, of the New York division, since it was proved on the trial that Sutphin had been twice discharged before this—once for giving false train reports, and again for leaving a switch open at Morrisville. If the executive officers of the Pennsylvania road dictate this cheap labor policy, they might as well hire Chinamen at once, and not be content with unstable and irresponsible cast-offs, simply because they can hire them at so much a dozen.

Less than a week after this butchery, another railroad slew two more human beings, and mangled a number of others. On the 5th inst two freight trains came into collision on the Chicago & Northwestern Railroad, four miles from Cedar Rapids, Iowa. Both trains were reduced to kindling wood; two men were killed outright, and several others were scalded and had limbs broken. The culprit in this case was Charles B. Lewis, the night operator at Cedar Rapids, who forgot to deliver a train order.

#### Mutual Union Notes.

The directors of the Mutual Union Telegraph Company, of which John O. Evans is President, have resolved to increase the capital stock to \$10,000,000, and to extend their lines to most of the great cities in the North and West. The company's wires now extend from Boston to Washington, touching New York, Philadelphia and intermediate cities. The present capital consists of the money invested in those existing lines. With the increase of capital now resolved on, the company proposes to extend its wires to Albany, Rochester, Buffalo, Cleveland, Toledo, Chicago, Milwaukee, St. Paul, Minneapolis, Kansas City, St. Louis, Indianapolis, Cincinnati, Columbus, Pittsburgh and Louisville, and other cities in the circuit embracing those centres. The managers of the scheme claim that the extensions they are to make will cover about nine-tenths of the paying district or territory covered by the wires of the Western Union Company. President Evans is a thorough business man, and has secured some of the best available talent in the business.

The Washington correspondent of the Baltimore *American* telegraphs to his paper as follows:

"The much-debated question whether telegraph wires can be buried and successfully operated will be tested by the Mutual Union Telegraph Company in this city within a few days. Failing to secure the necessary pole privileges on certain streets, the company made application to the District Commissioners for the right to lay a six-wire Mayall cable through the city sewers. The commissioners granted the privilege, and yesterday the company commenced the work of laying the cables. The first section, which will be an experiment, will be about 1,700 feet long, and will connect at the corner of Twelfth street and New York avenue with the main office. If the experiment proves a success the company will proceed to lay a similar cable to the Capitol, a distance of one mile, and to such other points in the city as their wants require. The company will open Monday with six wires to Baltimore, Philadelphia, New York and Boston. Already two of their wires have been leased by private parties between this city and New York. A large number of men will start early next week to put up wires over the National pike, through Cumberland, Md., Pittsburg, Pa., Wheeling, W. Va., and Columbus, O., to Cincinnati."

The Chicago *Inter-Ocean* says: "Mr. John O. Evans, President of the Mutual Union Telegraph Company, who has been in Chicago some days, looking after its interests, yesterday made arrangements with Col. J. J. S. Wilson, late



Superintendent of the Western Union lines, to take service in the Mutual Union. Colonel Wilson will doubtless prove a valuable acquisition to the new company." Colonel Wilson, while quite a lad, accepted, in 1850, the position of superintendent with the Hotchkiss line between Chicago and Madison, Wis., and in 1851 took charge of the office at Springfield, Ill. In a few months after assuming the management at Springfield, Colonel Wilson exhibited such executive ability that he was appointed superintendent of the western division of the Illinois and Mississippi Company's lines, the duties of which he performed with marked success and ability for eighteen years. When the government took military possession of the telegraph lines of the country, Mr. Wilson spent much time in the field, where he gave well directed and efficient aid to the army officers. This led to his being commissioned by Governor Yates, Sept. 10, 1861, Colonel of Volunteers, and to his reception of a warm and emphatic letter of thanks from General Grant. Colonel Wilson entered the service of the Western Union Telegraph Company in 1866, and was assigned by General Stager to the superintendency of the Central Division of the lines of that company, with his headquarters at Chicago. This district embraces 10,000 miles of telegraph route, and one thousand offices. A warm, personal friend of General Eckert's, the preceptor of Colonel Clowry, a thorough telegraph man, the soul of honor and a popular favorite with the public and employes, Colonel Wilson was nevertheless sacrificed when the consolidation came, but his lines have fallen in pleasant places, and he will find a worthy chief in the person of John O. Evans.

#### More Welcome Opposition.

The organization known as the Bankers' and Merchants' Telegraph Company has commenced active operations, the first route to be opened being that between New York and Philadelphia. A contract for the erection of this line, with at least twelve wires, has already been entered into and the work has been placed under the supervision of W. B. Gill, the late superintendent of the Sixth Western Union division. The erection of this line will be begun at once; it has been selected because, on account of the number of existing wires and the narrow limits within which the line can be profitably built, it presents more difficulty than one over any other section of country. At the same time it commands a highly important business and one in which the stockholders are specially interested, since almost all the shares are held by New York and Philadelphia business men.

The company has been incorporated in New York, New Jersey and Pennsylvania, and is intended, as its name implies, for business and commercial purposes only. Its offices will be in the business parts of the cities which it will connect, and it will not seek social or miscellaneous business. The stock has all been taken by bankers, brokers and merchants in New York, Boston and Philadelphia. The officers of the company are as follows: President, W. W. Mavis, of Mavis & Smith, bankers, Philadelphia; Vice-President, A. W. Dimock, of A. W. Dimock & Co., bankers, New York; Treasurer, J. H. Crossman, of F. M. Lockwood & Co., bankers, New York; General Superintendent, G. S. Mott, late Superintendent of the Atlantic & Pacific Telegraph Company; Secretary, Gere G. Case, late of the Continental Telegraph Company. The capital is \$1,000,000.

The International Telegraph Company filed articles of association at Albany, N. Y., June 4. The capital will be \$10,000,000. The route of the line is to go from New York, by way of Philadelphia, Baltimore and Washington, through the States of Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana and Texas to the Rio Grande River; also from New York by way of Albany and Rochester, to Buffalo; also from New York, by way of New York, Lake Erie & Western Railroad, to Buffalo, and thence west through Pennsylvania, Ohio, Michigan, Illinois and Indiana to Chicago; also from Philadelphia to Cincinnati and St. Louis; also from Cincinnati, through Mississippi, Arkansas and Texas, to Houston and Galveston; also from St. Louis, through Missouri, Kansas, Colorado and New Mexico, to Mexico;

also from Chicago west to California; also from New York to Portland, Me.; also from Boston to Montreal and Quebec. The shares are taken as follows: Andrew J. Baldwin, of Wilkesbarre, 50,000 shares; James F. Cox, of Morristown, 25,000, and Charles H. Stebbens, 25,000. The concern is to continue 100 years.

The International Company will work exclusively with the Delany patent, the invention of Mr. P. B. Delany. It is the intention of this company to begin the construction of its lines at Washington, and extend them southward via Richmond and Savannah to Mobile during the summer.

#### Answers to Correspondents.

OSBORNE: Q. 1. Is it necessary or not to have a switch to cut out instruments during lightning?

A. It is. An ordinary button switch will do. One wire can be connected to the incoming wire, the other to the wire leading out; or any ordinary telegraph cut out will answer.

Q. 2. If no switch is used, is there not danger of the buildings being fired by the lightning running in on the wires?

A. There is very little; in fact, not so much as if lightning should strike a house where no wires were attached. The most damage would generally be the destruction of the magnet wire. The wires would probably lead the electricity of the lightning out if the circuit were grounded. If a return wire is used, it would probably not be touched by the lightning.

Q. 3. Will one Leclanché cell ring a vibrator bell on a line 300 yards long, using a return wire?

A. No. To ring a vibrator properly, it will take at least four cells, and if only one bell is in circuit at once, that bell should have a resistance of 10 ohms. If two at once, they should be 5 ohms each.

Q. 4. Is there any kind of a call-bell made that does not require a battery?

A. Yes. The magneto bell is generally used on telephone lines. Its current is generated by the movement of coils of wire near magnets. A magneto bell can be bought from almost any good manufacturer of telegraph instruments.

F. E. A., CANADA.—Our paragraph relating to the scarcity of good operators applied exclusively to strictly first-class men. 1. A "good" operator can hardly be gauged by the number of words he sends and receives. On a pure question of manipulation a man who could send and receive 30 words a minute—that is, 1,800 words an hour—might be called "good." A man who could sit in at any time and always calculate upon disposing of from 2,000 to 2,400 words an hour, send or receive, in good style, might be classed as strictly first-class. Your copy would not pass muster in that class. But a "good" operator—that is, a valuable one to the company—must combine many qualities. An ability to read bad copy without stumbling, to be always on time and diligent, good manners on the wire, some brilliant flashes of silence, and the faculty of turning over the office cash intact at the end of the month are all elements entering into the character of a "good" operator. The honest, plodding gentleman with the record of a 20-word gait is less of a "plug," as far as his employer's interests are concerned, than the *blazé* rusher who gets away with the office cash at the first opportunity. The telegraph needs thorough men, not specialists. 2. The salary paid to such an ideal good operator would range all the way from \$30 to \$90 per month, according to location. For a man who met all the above requirements and maintained that standard, the latter salary would be assured to him in the end; but in the meantime, if he went to bricklaying and exercised similar qualities, he would become a wealthy contractor. 3. We would not advise you to try the States at present. 4. There is no scarcity of operators here, except of an exceptional class, of which there will always be a scarcity. 5. The list would be too long to print, but you can address the manager of any Western Union office, inclosing stamp for reply.

FOUR DOTS.—Twenty words per minute is slow working. The average, all in all, is probably 25 words; of the faster wires, 35 words. See the foregoing reply.

#### A Definition of Radiant Ener-Jay.

First, solidity was secured to the substance to be planted by the "post"-roads being made highways, and thus the molecules were made adhesive.

Extremely so!

The heat, however, increased so rapidly at certain points that the form of the structure began to assume the lick-uid, and then the molecules began to jostle and bang each other in a most excitable way.

Remarkably so!

Still later, the gas house, a very "promising" edifice, was erected, and volumes of that commodity were showered upon the molecular formation of the public's anatomy, which by its impact on their cohesiveness toward a separation from the control of the power that had imprisoned them in its unrelenting grasp, produced numerous collisions of the particles, in their struggle for freedom and supremacy.

Wonderfully so!

The most pugnacious atoms, at this stage, having assimilated to themselves all the weaker and less antagonistic ones, and having driven out those not easy or willing to be so absorbed; also having a clear track, their movements are less hampered and motion takes on a new phase, so that we are left on the wonders of border-land as to the ultimate path to be pursued, or the decision of the "course."

Very truly so!

#### New Books.

"Electro-Telegraphy." By Frederick S. Beechey, Telegraph Engineer. New York: E. & F. N. Spon, 446 Broome street.

This little book is the second edition of a work originally published in 1876, and from the succinctness and clearness with which it is written, not less than from its brevity and the extreme moderation of its price, it merits almost unqualified praise.

Its title, "Electro-Telegraphy," we are inclined to think, may be justly criticised. Two chapters are devoted to the nature and sources of electricity and three to batteries. Practical telegraphy, including various systems and several varieties of instruments, is then briefly described, and special arrangements, as also testing and measurements, are briefly treated.

Very little can be said of the illustrations; but they help the text, and the chief wonder about the work is how so much can be compressed into so small space.

The price of the paper edition, which contains 126 pages, is 20 cents, which brings the book within the reach of all.

In several large cities—Philadelphia, for instance—the late American Union Company received valuable privileges on the express condition that it would never merge with any other telegraph company. It filed bonds as security for its good faith, and agreed that those privileges should be forfeited if it ever consolidated with any like concern. The officers of those cities hesitate to ask for judgment on those bonds, alleging that they can procure no proof of a consolidation, notwithstanding that a verified copy of the testimony of Jay Gould and others in the William's suit is to be easily had; but, if we may judge by the signs of the times, there is a growing anti-monopoly feeling in the community which may remind them of their neglected duties about the time when their tenure of office expires.



## Chicago Notes.

To the Editor of The Operator:

SIR: Since our last communication quite a number of changes have taken place in our ranks. Men who have been in this office for the past fifteen years, and have almost become gray in the company's service, are quitting the ranks of a profession they so brightly adorned to engage in other occupations elsewhere. While we are sorry to see them leave us, we hope what will undoubtedly be our loss will be their gain. The following resignations have been handed in:

Wm. McMillan, for the past seventeen years check boy and then manager of the check department, leaves us on the First, and goes to New York to engage in other business.

Mr. Parker, Col. J. J. S. Wilson's private secretary, has resigned.

Charlie Mixer, assistant chief, gone to Washington.

F. Minor, gone to St. Paul.

A. G. Drake, ditto, accepts position on M., P. & St. L. R.R.

J. D. Walker resigned position as reporting operator for *Inter-Ocean* private Washington wire and accepted position with one of the produce exchanges.

Sam. Wallace, of the A. U., succeeds Mr. Walker.

Arrivals: Jeff. Prentice, Mr. and Mrs. Frame, H. J. Herbell, from St. Louis; Wm. Sanderson, Rock Island, Ill.; Messrs. Swift and Sherwood, Kansas City; and a number of others whose names we have not been able to ascertain.

Al. Baker has gone to Michigan for a few weeks' vacation.

L. L. Lathrop was summoned home to New York State suddenly on account of his mother's serious illness.

Visitors: Tom Winters, well known in Canadian circles, from Phillip, Minn., and John Mason, a well-known operator, at one time employed in Ch. office, but now superintendent of some railroad in Missouri, were among the visitors here this month.

A thief got into our coat-room the other night and stole three valuable overcoats belonging to Will Kane, George Hoyt and J. J. Burke. The insecurity of the coat-room has been the subject of comment here for years past. A waiter at the lunch counter was suspected and arrested. The ladies also complain that there is a sneak-thief that pays a periodical visit to their lunch and dressing-room.

Our barber has been cleared out; the men no longer enjoy the privilege of getting shaved upon the company's time. "Corkey," the bootblack, got notice to quit; the lunch-room proprietor likewise. Our lunch-room is to be thoroughly renovated and conducted on the dairy principle hereafter. This is a reform in the right direction, for the lunch-room was the filthiest place in the city. While Superintendent Tubbs is instituting these reforms, will he kindly look into the paying system, and see if it cannot be put upon a more satisfactory basis. Night men complain that they are kept waiting from four to six hours on the first of every month for their salaries.

An operator from Orilla, Ont., applying for a situation incloses a tintype of himself with "73" scratched in the corner. Canada "takes the cake." W. C. Long's second eldest boy died from diphtheria. He has our deepest sympathy.

On May 28th the following official order was issued: "Hereafter no extra pay will be allowed for Sunday work. The day force will take it in turns." First move on the board, what will be the next? We would like to know whether this order has Gen. Eckert's approval, or if it is merely a local manifesto. The universal opinion in this office is, to put it mildly, that it is unjust in the extreme. We work as it is ten hours a day, with half an hour for lunch. In other large offices where the men are compelled to take their turn Sundays without receiving extra pay for their services they get off at half past five. In any other branch of business outside of telegraphy if a man is forced to work Sundays he is paid twice as much for it as for regular day's work.

Pleased to see New York has made the first move toward organizing a society for the protection of our interests. The country is ripe now for such an organization. There seems to be a feeling of uncertainty and mistrust between employer and employé. How can it be otherwise? Let those

in high places who profess to have the welfare of the telegraphic community at heart, not disregard the murmurings of the multitude. There's a limit to everything; all we ask is to be treated like men, with a smattering of justice and equity.

## Toledo (Ohio) Notes.

To the Editor of The Operator:

SIR: Since our last communication the American Union main office has been closed, and the American Union and Board of Trade Telegraph offices in the Produce Exchange building have been merged into one. The new office is complete in every respect, having direct wires to New York, Buffalo, Detroit, Cleveland, Pittsburgh, Cincinnati, Louisville, Chicago, St. Louis, Kansas City, Omaha and other important points. Excellent service is the order of the day, and an immense amount of business is handled by the twelve to fifteen operators employed. A. H. Thorpe officiates as cashier, W. W. Umsted, chief operator, and C. D. Meserve as manager of the gold and stock department.

At the Western Union main office some changes have taken place—Mr. Herr having resigned to accept a position in the Chicago main office. Messrs. Hosley, Campbell and Springer, formerly of the A. U. force, are now employed in this office. P. W. McGill, of the A. U., has gone to Chicago, also Mr. Kennedy. Charles Ganson is on the day force in Detroit. T. J. Stevens, formerly manager of the A. U. office "on change," has resigned to accept a position with Reynolds Bros., a leading commission house of this city. Tom will be missed from the ranks. It is amusing to hear him use the term "we grain men."

Messrs. Pearce, Stevens, Springer, Robertson and Hasley boarded a train at the Union depot and took a trip to Detroit on Sunday last. They were greatly surprised on alighting from the train at being met by a delegation of twenty operators from "De" office. A general hand-shaking followed, when the boys were conducted to dinner at that excellent hotel, the Standish House. After dinner sight-seeing was indulged in, the Detroit delegation doing the handsome thing on every hand. Prominent among those who labored hard to make everything pleasant for the Toledo gentlemen we may mention Messrs. James Houlehan, Norm. Webster, Andy Beaubier, Harry Becker, Jack Morrison, Bob Risdon, Messrs. Scott, Dillon, Colby and others. The day was a very enjoyable one, and Toledo wants a chance to return the compliment if she can.

Bert Pearce is now generally known as Mr. Six-ears, an operator at a way office on the Lake Shore road having requested Jim Wright to give his "73 to Mr. 6-ears" a few evenings since.

HAWKSHAW.

## Mississippi and Louisiana Notes.

To the Editor of The Operator:

SIR: The force at Vicksburg consists at present of W. E. Flippen, manager; C. W. Montgomery, F. R. Steele and H. B. Geer, operators. Our daily papers both subscriber to the Associated Press, and the Cotton Exchange takes the C. N. Ds. Business during fall, winter and spring is generally good, but during the summer months falls off considerably, hence our force was reduced on May 1.

Mr. Gus Luckett is day operator in the general manager's office of the V. & M. R.R., and Mr. H. Hand stands the lonely watch. Mr. I. Hardy, an old-timer, is employed in the general superintendent's office of same road.

At Greenville, Miss., Mr. A. E. Dennett and an assistant look after the interests of the G. & V. Telegraph Co. Mr. William Hunter is operator at Mayersville, and Mr. R. Spann at Ben Lomond, on same line. Old "father Downey" runs the Chotard office, and keeps up the line on his section. While out repairing during the recent high water, he slept one night on a log in several feet of water. He said he was glad of the water, as it kept the bears and panthers away. At Delta, La., on the V., S. & P. R.R., Mr. Eugene Windes is operator, and at Monroe, on same road, Mr. J. Morrison has charge of the W. U. office. At Shreveport, La., Mr. W. S. Taylor is manager, assisted by Mr. A. W. Moran, who formerly worked in this office. Jackson, Miss., is repre-

sented by Mr. A. Julianne, assisted by Mr. Cross. The latter is at present away on leave of absence, Mr. W. Harvey subbing for him. Mr. A. Wark, an old-stager, is manager of the W. U. office at Natchez, Miss., and Mr. Burke is his assistant. Mr. Wark is known as the "wooden man," owing to the fact that he never breaks on press. Mr. McMurchy has managed the Fayette (Miss.) office for upwards of twenty years, and bids fair to do so for twenty years more.

CARPET BAGGER.

VICKSBURG, Miss., June 6, 1881.

## Cincinnati Items.

To the Editor of The Operator:

SIR: I. N. Miller of the American Union has been appointed Superintendent of the Western Union, vice Geo. T. Williams, resigned. Mr. Williams has been connected with the Western Union, in this city for the past sixteen years, and has been noted for his clear executive business qualifications. The new Superintendent, previous to his identification with the American Union, was for many years Superintendent for the M. & C. R. R., and is considered to be one of the finest electricians in the Western country.

Mr. Edward Le Loup, formerly Superintendent of the American Union for the Southern Division, with headquarters at New Orleans, arrived in the city yesterday morning and reported to Superintendent Miller. He will assume the management Monday. In appearance Mr. Le Loup is not unlike Signor Tagliapietra, the famous tenor singer, and is full of energy and worthy of the responsible place to which he has been assigned. He was one of General Eckert's most thoroughly tried lieutenants in both of the great telegraph fights. There was a unanimous feeling, and a strong sentiment expressed in favor of C. E. Page, the present manager of the American Union, for the managership, on the principle that "to the victors belong the spoils;" but as the company has need of his service elsewhere, we do not know of a more fitting selection for Cincinnati than Mr. Le Loup. The retiring manager, F. A. Armstrong, has been in the service continuously ever since he was a boy, some thirty years, commencing as messenger. He is a very courteous gentleman in all his business and personal relations, and is a man of decided executive ability.

While I am writing (Sunday afternoon) there is one half of the working forces of the W. U. and A. U. offices assembled in a room of the Galt House, this city, holding an initiatory meeting for the purpose of organizing a protective union. There is no secrecy about the meeting, and I can conscientiously predict that in less time than one month it will have the entire office enrolled.

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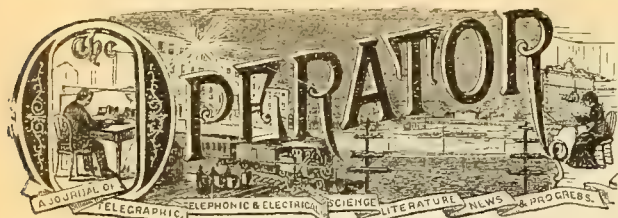
## Reading (Pa.) Items.

To the Editor of The Operator:

SIR: The P. R. & P. and W. U. office is in a flourishing condition, and is very ably managed by Mr. Fred. H. Gartlan, with the following efficient corps of operators: W. H. Runyon and Wm. L. Gehr, days, and Wm. H. Hamaker, night chief and pressman. Mr. E. C. Runyon acts in the capacity of clerk. The American Union still does its share. Business has increased rapidly since the consolidation, and no doubt the A. U. will ere long have charge of all the W. U. wires in this city under the new management. Jno. M. Bertolet is manager of the American Union; his assistant, Mr. Samuel F. Higo, is the smallest operator in this section, measuring about 4 ft. 6 in. and weighing about 65 lbs. He is, however, a good operator. The P. & R. Depot office is presided over by F. N. Boyer as manager, with Joe Barrett, C. M. Dechant, Wm. Achenbach and Mr. W. Light as operators. Mr. O. W. Stager is still Superintendent of the P. R. & P. Co., with E. R. Adams as Assistant. Mr. Adams is a first-class operator, and is highly esteemed by all the telegraph manipulators.

The Telephone Exchange is ably managed by Jno. Fleck; vice Jno. Smith resigned to accept a situation as clerk with the Scott foundry. Mr. H. W. Spang, general manager of the Eastern Pennsylvania Telephone Company, left last night for Cincinnati, O., on business. JACK.





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W. J. JOHNSTON, Editor and Publisher.

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## A FEW TIMELY SUGGESTIONS.

There can be no mistaking the rumbling sounds, East and West, which, after a fair trial of three months, greet the tendency of the new telegraphic management to increase the number of working hours, to decrease the stipend and to ignore altogether the rules of civil service. Fifty-four hours are in all conscience a fair week's work, yet in some places—Chicago, for instance—the fifty-seven hours already exacted are being supplemented by the imposition of unrequited Sunday work. In other places the management is working havoc with our hoped-for rule that, other things being equal, promotion must be from the rank next subordinate. Men scarcely a year from the operating table have, after a brief service in the American Union fizzle, been returned to their old offices and intrusted with positions of which they had never dreamt. In these cases, at least, it should not be too much to expect that if these young men are to be thus elevated they be transferred to other stations, since the suddenly altered position leaves the way open for disorganizing elements—too much familiarity, or possible spite or resentment in paying off old scores, when a man is within a year taken from the ranks and placed in a position of great authority over his old associates. But the salary reductions are more noticeable than all, though we entertain grave doubts regarding the expediency of many of the schemes proposed as checks to this peculiar system.

To the great number of friends who have been good enough to write us at length on the subject we have a word of warning; and, since true loyalty to a friend should rather reprove than flatter, and believing that next to knowing how to conquer honorably is knowing how to yield gracefully, we have no hesitation in setting forth some important points for mature consideration. Some men are not gifted with practical minds, and are therefore unable to appreciate or to make allowance for the many difficulties which present themselves in the government of a great enterprise. Reforms need time, great patience on the part of all concerned, and gradually liberal methods. All good things cannot be obtained in a day. If those who are now temporarily snowed over have apparent grievances, there may be found upon investigation some valid reason for burying them so far out of sight. And even if, as it certainly does appear, the new managers are screwing the vise a little too tight, they must very soon see that, although the changes are acquiesced in with all due devotional sadness, it behooves them to resurrect the forgotten rule which enjoins us not to ride a willing

horse to death. Moreover, grown men with wives and children, and dependent mothers, can not afford to fight any shadows or windmills, and we must be well assured that the dissatisfaction is really widespread and well founded before making any remonstrance.

But, above all, we should take counsel of only those of our friends and co-laborers who remain unswayed by the ebb and flow of personal prejudice, and who are not easily bewildered by unexpected emergencies. Having resolved to do unto others as we would be done by, we should select spokesmen who, by continual reflection, analysis and synthesis, have thoroughly mastered both sides of the question. It will not be enough that these trusted men are ordinarily intelligent and fair-minded—they must be extraordinarily so, ripe in sober manhood and fully impressed with their grave responsibilities. With such a board to represent us, if it be met with the spirit of fair play from the other side, all controversies could be promptly settled. No employer who sought to act fairly towards us would have anything to fear, for we would oppress no one. We would have no fear of being ourselves oppressed, since in our unanimity, coolness and discipline, with a just complaint, we could feel assured that it was beyond the power of others to oppress us.

THE sudden and premature demise of our esteemed contemporary of Boston, the *Telegram*, is privately announced, after the issue of only two numbers. It was a handsome 16-page journal, in paper covers, well illustrated and very creditably edited. We had a kindly feeling, and plumply said so, for any competing journal which would show enough enterprise and ability to keep *THE OPERATOR* well up to the standard of perfection, and for that reason principally we regret that our late contemporary fell by the wayside. We extended it a kindly greeting—the mavis never piped its love song to the morn sweeter than we would have sung its lullaby song. Our naturalists tell of the elephants traveling in India—how the old ones swim the running streams first, and then watch tenderly and anxiously the frantic efforts of the junior members of the herd to cross over, being meanwhile ready to plunge in to their aid. So were we, who crossed the stream some time ago, watching in a fatherly way the struggles of this baby venture; but, without a word of warning, it has disappeared beneath the waters where so many of its kind have been swamped and sends us its own obituary written on a postal card. The second and last number of the *Telegram*, although a trifle behind time, bore evidence of apparent prosperity and of being on a sound financial basis, so that this sudden post-mortem announcement of collapse leads to the inevitable reflection that, as Josh Billings would say, "It would have been money in the *Telegram's* pocket if it had never been born." Conducted, as it announced in its first number, in favor of our telegraphic system being transferred to Governmental control, it found, probably, less support on that account, as such a scheme is now decidedly unpopular in this country. In its Salutory the *Telegram* pithily said: "In telegraphic publications, as in all other trades, the people, sooner or later, learn who serve them best, and in the survival of the fittest the *Telegram* hopes to have a long and prosperous career." *THE OPERATOR* subscribed heartily to that doctrine from the very first, and, under the "survival of the fittest" rule, sincerely mourns the untimely taking off of its lively and adolescent contemporary.

THE appearance in our local columns to-day of the record of two fatal railway accidents in widely separated parts of the country, and both ascribed to the carelessness of telegraph operators, is a striking commentary on the prevailing "economical" system of employing cheap and incompetent men. If the spirit of compassion which is found in the heart of every true man does not animate that of the ordinary telegraph executive officer, his duty to the public and his own employers demands that he should at once assume such a virtue. Your cheap man looks well (for the shoddy superintendent) on the payroll, but he is generally a person without ability, and always without any sense of responsibility; and thus he is for the sake of false economy permitted to plug away day after day at important business which, if not considered of great consequence to the company which he serves, involves perhaps thousands of dollars, and oftentimes the lives and limbs of its patrons. The newly organized opposition companies may glean a wholesome lesson from this. The public will not patronize a telegraph or railroad company simply because it is opposing a great monopoly, or from any other emotional or sentimental reason. The public demands that the company which transmits its business, shall employ the most skilled and intelligent workman and the best apparatus. In fact, the public wants good work—and good men are not in the habit of yielding gratuitous services—and the only way in which a greatly needed opposition can secure patronage is to serve the public better than the Monopoly serves them. To do this they must employ competent labor, and to obtain the latter they must pay fair salaries. No good salaries, no good work; no good work, and the public will travel and send its messages by other lines.

THERE can be no better evidence of the influence of *THE OPERATOR* than the wide comment which is evoked by some of its articles, and on no subject has this been more marked than that of its advocacy of an open, fearless and recognized organization of telegraphers. Replies and suggestions, which have been uniformly favorable to the scheme, are found to be in some cases impracticable or absurdly sanguine. We desire that our friends, in discussing this important subject, should be guided by past experience, which has taught us the absolute necessity of restraining undue enthusiasm and of the exercise of prudent caution in utterance. A great body of intellectual men, by consolidating, form a tremendous engine for good or evil, so that, to avoid tyranny on our side equally as effectively as we would combat oppression on the other side, we should look as diligently to the eradication of pernicious elements among ourselves as we should to the reform of crying evils among others. In fostering a spirit of self-control, then, we may find it necessary to tone down the eager enthusiasm of disappointed or unthinking counsellors, the violent passions of the spiteful and unjust, the insidious advances of the man with the allegorical axe to grind; but, at the same time, the true spirit of independence and the germ of ultimate success must be preserved, in a straightforward, dignified and manly way.

The refusal of the Commissioners of the District of Columbia to permit the Mutual Union to stretch their wires over the city, and the experiment now being made by that company of running cables through the sewers, might reasonably open up the question once more as to whether it is advisable or not to abolish all wires in cities—



overhead and underground—or at least in cities where there are not more than half-a-dozen branch offices. A main office far out in the suburbs, where all the relaying could be done, with the through wires only skirting the city limits, and with pneumatic tubes from that main office to the various branch offices in town, are possible even if not deemed quite practicable. The saving in rent and taxes on a huge building in the crowded portion of a city would be an item worth considering, while the plan, if feasible, would certainly solve the problem of underground wires in cities. When A works direct to C via B, there seems to be no good reason why the “through” connection should not be made in the suburbs of the latter place, without describing a totally unnecessary “loop” over six or seven miles of poles in that town.

As the season of summer vacations is upon us, every operator who can at all afford it should arrange for a short respite from his customary worry and work. Even if it should cost a few dollars extra, the outlay will be fully returned in the additional vitality and spirit gained by a brief change from the interminable number of reds and blacks, and duplexes and quads, to the quiet country lanes, the odor of the honey-suckle, the ripple of the stream and the singing of the birds. In all cases it would be a proper thing for managers—the new managers, at least, if the altruistic spirit has not yet penetrated the rhinoceros-like hide of the old ones—to make it as easy as possible for those who desire to take a run into the country for a few days. The consolidated companies have, in the main, a class of operators who are both capable and willing to work, to whom they are indebted for much of their past and present prosperity, and it would be only a fair acknowledgement of these facts for the managers to deal liberally in the matter of temporarily shortening hours or of otherwise giving aid to those who intend taking a brief period of relaxation.

THE Direct Cable Company and the *Evening Telegram* of this city seem to be justly proud of a recent feat in rapid telegraphy, by which the result of the Derby race in England was announced here in advance of all other mediums of communication. *The Telegram*, with its usual enterprise, had an operator and instrument on the grand stand at Epsom. The remainder of the story is thus recorded: “Horses got away at 10.21, 5, New York time. Iroquois passed winning post 10.23, 55, New York time. Result reached New York 10.24. Time occupied in transmission 5 seconds. Within four minutes, absolute time, from the moment the winning colt passed the wire, the news was going into type in New York.” *The Telegram* is certainly excusable for indulging this time in a modest boast at the expense of its rivals, while the admirable management in the Direct Cable Company’s offices, which renders such a feat possible, may be laid to heart with advantage by President Doren and the other officers of the coming American cable.

AMID all the push and enterprise of the telegraph the Bourbons still keep popping up to the front. In Paris, last month, thirteen dispatches from Tunis to the London *Standard* were “stopped” and the price was returned to the correspondent, a proceeding which the *Standard* justly pronounces worthy of the worst days of the second empire. On this continent, since the Princess Louise was stood on her head in a snow-bank by a runaway sleighing team, and the

Governor-General, the Marquis of Lorne, caused all reports of the circumstance to be “stopped,” we had supposed that telegraphic Bourbonism was dead. But it is now heard of once more on the cable connecting the United States and Mexico. It seems that press dispatches sent over that cable must be addressed, not to the various newspapers, but to Don Ramon Guzman, who submits them to the *Diario Oficial*, so as not to “irritate the Government.” There seems to be too much government or entirely too much Don Ramon Guzman down in Mexico for the good of American telegraphy.

It will interest readers to know that a representative of THE OPERATOR will leave New York for Paris early in July, and remain in that city during the whole of the electrical exhibition. He will send us for each issue a descriptive letter from personal observation, giving everything in reference to the several exhibits that readers of THE OPERATOR will be likely to feel interested in. It will doubtless be impossible to do justice to the subject in a few letters, but the articles will be continued even after the close of the exhibition. It is thus hoped that such American telegraphers as cannot make it convenient to visit Paris on this occasion, will, through the enterprise of THE OPERATOR, be kept informed of what goes on there.

A BABY was born in the steerage of the steamship *Germanic* during Mr. William H. Vanderbilt’s last trip from Liverpool. Those who entertain exaggerated views with regard to that gentleman’s hard heart will do well to study the text of this note: “Give this poor woman the best medical attendance you can and the best of treatment and nourishment, and send the bill to me, W. H. Vanderbilt.” Out of gratitude the little waif of the ocean was christened “Mary Germanic Vanderbilt Phillips.” Mr. Jay Gould being, as he testified in the Williams suit, “a little lame,” was rather short on this nautical deal; but his charitable heart may see us later—and, then again, perhaps, it may not.

THE English operators, who have been agitating for an amelioration of their condition since Christmas, have hitherto confined their efforts to protests by local associations. But, since the redress sought seems to be as far away as ever, there is a disposition now to form a general union of the entire fraternity, and a strike is not a very remote possibility. There are 5,000 operators in the service (1,800 of them women); there are no rival companies from which the Government could draw assistance, and there is no floating reserve of operators, so that a determined and general movement would be sure to bring speedy relief.

THE cable steamer *Faraday*, which on the 29th ult. completed the laying of the western portion of the first of the two new American cables from Canso, Nova Scotia, has arrived back at Penzance, England. The work of laying the eastern end will be proceeded with at once, and the whole cable will be in working order probably by next September.

She has already laid the Eastern or European end, and will now proceed to sea to lay the deep portion, and thus connect Canso Bay on this side with Whitesend Bay, in Cornwall, near the Land’s End, England.

THE Directors of the Western Union Telegraph Company have declared another quarterly dividend of 1½ per cent., payable whenever the

courts will permit. This makes 3 per cent. in all now due the stockholders. Holders of the company’s certificates of indebtedness are to receive the same amount as stockholders. The statement of the business for the six months ending June 30 shows net earnings amounting to \$3,536,803, out of which is to be deducted for interest, sinking fund and construction \$818,698, leaving for dividends \$2,718,105, or nearly 5¼ per cent. on a capital of \$80,000,000.

THAT box of “stored electricity,” or condenser, perfected by Camille Faure, seems to have created a sensation. It appears that by its use, while the electric light cannot be subdivided, a difference of intensity can be made in the light at will. During a recent test of Mr. Faure’s battery, in Paris, a little canoe called “The Telephone,” was sailed up and down the Seine, driven by one of the “accumulators.” The Faure battery has not yet been granted an American patent.

THE over-sanguine manner in which some of our august legislative bodies threatened dire consequences to the telegraphic consolidation convinced us that they would speedily cool off. In no State was the anti-monopoly feeling more pronounced among local statesmen than in Pennsylvania; yet, when the Assembly of that State adjourned *sine die*, on the 9th inst., the Telegraph Anti-Consolidation bill was left unacted upon.

THAT is an interesting telegraphic item from Russia which says that all the telegraph officials near the Gatchina Railway have been arrested, owing to the discovery of an infernal machine under the rails, connected by wires with a battery in the telegraph office. We should not be surprised to hear that those operators have had their salaries reduced.

THE telegraphic ability of our British cousins shines forth in all its effulgence in the London *Post*, *Standard*, and other papers, just to hand, which in their American dispatches announce the death at Philadelphia of “Thomas Ascott, ex-President of the Pennsylvania Railroad.” Premier G. Ladstone should call the attention of P. Arliament to this kind of telegraphing.

THE Pennsylvania Railroad, which pays its operators probably more beggarly salaries than any other railroad company in America, has recently killed two men by the carelessness of one of its operators, and in the ensuing bill of damages it will be likely to pay more than would maintain a whole telegraphic tribe for a year.

A NEW semi-monthly telegraphic paper, called *L’Electricien*, excellent in form and general make-up, has appeared in Paris. It is edited by a committee of which the celebrated electrician, M. Hospitalier, is the secretary, and it contains a great amount of information valuable to the profession at large.

It has been definitely ascertained that the cost of producing electric light by incandescence is, at the present time, greater than that of producing gaslight in the proportion of 1,500 to 992.

THE formation of new competing companies is still reported. It’s a cold day when we don’t hear of at least one, and out of the lot we ought ultimately to find a live and *bona fide* opposition.

WESTERN UNION stock is quoted at 133. Last issue it was 129.



### The Burning of the Nashville Office.

To the Editor of The Operator:

SIR: Our handsome new office is in ashes, and all of us are in mourning. A paint and oil house on the opposite side of the street caught fire about ten o'clock on the morning of May 17, and before we could realize any danger our building had taken fire. A favorable wind and everything as dry as tinder made quick work of what was undoubtedly the most complete and comfortably arranged office in the South. A few parts of instrument sets, the three box relays used at the switch board, and the switch board itself was all that could be saved from the third floor. The second floor was occupied by General Superintendent Trabue, District Superintendent Compton and Assistant Superintendent Tree, neither of whom saved anything. Many of the records, etc., were thrown out of the windows into the street, but were burned before they could be reached. The loss will entail greater inconvenience upon Mr. Tree than either of the others, as his files of records were the work of many years of the most careful and systematic preparation, and I very much doubt if there was another superintendent anywhere who had such a thoroughly complete set of records as Mr. Tree.

Harmon Stewart, our chief, is also greatly deserving of sympathy. It had been but six weeks since he had, after a month's very hard work, finished running the wires and arranging the new operating room. His work was such as any one would be proud of, gaining high compliments from all who saw it. To have all this destroyed in an hour was discouraging in the extreme.

Wires were at once run into the old tumble-down building we had just vacated, and in a few days, as one of the boys remarked, "Our new office was but a dream."

In our present quarters, appearances would indicate camp-life. Battery stands, with five and six hundred cups, are on the same floor as the receiving department; the second floor having been altered, the usual stairway was cut off, and we hazard our necks and limbs up a narrow, crooked back stairway to the third floor, which is now more untenable than ever. The back part of the second floor, which was our former battery room, is now occupied by Superintendents Compton and Tree and Manager Fisher. They are, however, minus their nice desks, using instead, dollar-and-a-half poplar tables. A passer-by might easily mistake it for the sanctum of a country newspaper editor. General Superintendent Trabue and his two gentlemanly clerks, Messrs. Crowley and Overton, found desk room in an insurance office across the way. Manager Fisher was rather more fortunate. By running considerable risk, and by getting his hands pretty well scorched, he managed to save his most important books and papers.

The property owners in the burnt district, with commendable pluck and energy, are already clearing the debris preparatory to rebuilding, and by Christmas we hope to be fully settled in another new and pleasant office.

I ought to mention that of the twenty-five or thirty men connected with the office, every one I have yet met was the last one to leave the burning building, except, perhaps, Harvey Pride, who says he tried hard to be the first, but could not make it.

NASHVILLE, Tenn., June 5, 1881.

### New Haven (Conn.) Notes.

To the Editor of The Operator:

SIR: Telegraphic matters in the City of Elms for the last two months have been quite exciting. The A. & P. office was closed April 1. Mr. M. J. Mallahan, manager, was offered a position by the W. U., but declined, wishing to take a vacation. Mr. J. F. Malone (our Philadelphian) night press man for N. A. P., was transferred to the W. U. office, same position. Mr. A. P. Foley, day operator, transferred to the Union depot, vice Mr. E. Miller, who accepted a position with W. T. Hatch & Sons, of New York, at their branch office, this city. The American Union Company's office was kept open until June 1. Mr. Hendricks, manager, being transferred to New York, same company. Mr. M. C. Denison, operator, is still at A. U. office, in charge of wires for testing only until the cable arrives to transfer wires to W. U., when he will be given a

a position there. At the Western Union J. Murray Fairchild, for twenty years manager of the W. U. office, has resigned. His retirement from the management of the office was generally regretted, both by the force under his charge and by the citizens generally. He has accepted a position with the New Haven Electric Light Company, with whom he has a contract for a number of years, and the superintendency of the New Haven City Fire Alarm. On May 31 he was presented (informally) by A. Osborn Bailey, on behalf of the fraternity, with a heavy solid gold shield. Mr. Fairchild was much pleased at this friendly recognition on the part of his late subordinates. W. H. Fairchild, for many years cashier and operator same company, this city, has also resigned. He, too, had many friends, and his retirement was generally regretted by the telegraphic fraternity of the city. It is understood that he is also to go with the New Haven Electric Light Co.

J. H. Lounsbury, of Hartford, succeeded Mr. Fairchild, and, after managing the office satisfactorily for two weeks, resigned to accept the management of the Hartford (Conn.) office, vice G. B. Hubbell, resigned. His successor at New Haven will be W. A. Harris, for many years manager of the W. U. office at Bridgeport, and a very popular man. Manager E. Ryder, of Meriden, will be transferred to Bridgeport, and Mr. J. W. Copeland, of Rutland, Vt., will succeed him. E. A. Stevens, operator W. U., has resigned, and will go with the A. U., New York. The present force at the W. U. consists of Fred Fairchild, chief; W. P. Weaver, Associated Press leased wire; L. H. Hart, New York quad; J. M. Howard, Boston and way; T. F. Ford and E. A. Stevens, way; J. F. Malone, N. A. P., nights; A. Osborn Bailey, chief clerk; A. J. Bailey, delivery clerk; E. F. Gorham, entering clerk; Union Depot, B. Dexter Hubbard and A. P. Foley; Church street Branch, Julius Cramer; American Rapid, A. L. Page, manager; Mr. Megner, chief operator, with a force of performers and type writer.

Business lively at all offices.

The Continental will probably open here July 1.

### Lake Shore Items.

To the Editor of The Operator:

SIR: The following from a recent issue of the Erie (Pa.) Graphic, presumably from the pen of Mr. E. P. Clohessy, of Silver Creek (N. Y.) office, may be of interest to some of your readers:

"The old clock in the Silver Creek telegraph office is rather a historical curiosity in its way. On the face of this clock, and on the inside of the door, are written the names, with month and year opposite, of nearly every telegraph operator who ever worked in the office; some of the names have become so obliterated as to make it almost impossible to read them. Among many others are the following: Tom Goalding, 1855; Tom Cryan, '58; Carl Gifford, '62; C. D. Wyman and Dewitt Clinton Swartz, '64; W. Van Duzer and Geo. P. Gaston, '65; F. N. Beach, '66; C. E. Miles, '67; T. W. Niles and W. H. Smith, '68. Many good stories could be told about these veteran telegraphers. Many of these Knights of the Key we have long since lost track of, and some have become successful in other fields. George P. Gaston is now a prominent merchant of our own town, and can tell many funny stories of 'ye olden times.' Wm. Van Duzer, who was a celebrated train dispatcher at the time he worked in this office, is now one of the oldest and most successful engineers on the Lake Shore Road. Telegraphy still has a fascination for T. W. Niles, who is now and has for many years held the responsible position as train dispatcher in Buffalo, and it can truthfully be said of Tracy that he is the right man in the right place."

Mr. Clohessy, who is at present manager of Silver Creek office, is a thorough telegrapher, and well worthy to fill the position graced by his distinguished predecessors.

Mr. E. C. Faircloth, the popular operator at Erie, Pa., depot, is making an extended tour of the East, T. Murray, of Harbor Creek, relieving him. J. Walker, of Angola, N. Y., is working the "last hours" at Dunkirk, N. Y. "Bob" Kinney has been transferred from Brocton, N. Y., to Lake View, N. Y., night office, Will Ryan, of Dunkirk, going to Brocton. We had

the pleasure of meeting Mr. Wood, manager of Fairview, Pa., office, recently, who is a very pleasant and entertaining gentleman.

EASTERN DIVISION.

Hamburg, N. Y., June 5, 1881.

### Western Division A., T. & Santa Fe R. R.

To the Editor of The Operator:

SIR: On the western division A., T. & Santa Fe R. R., at La Junta, Col., we have M. P. Doolley, chief dispatcher; T. J. Guinn, formerly of W. U., Buffalo, second dispatcher; C. W. King, third dispatcher; J. F. Howell, F. L. Myers and H. D. Ward, operators; W. A. Sharp, an old-time operator, is superintendent's clerk. W. S. Whiter, formerly assistant chief dispatcher, this office, has resigned to accept a more lucrative position in the office of chief engineer of the company at Las Vegas, New Mexico.

The following list of operators constitute our efficient main line corps, and a more congenial and obliging lot of boys were never congregated upon one clothes line:

B. F. Smith, of Minneapolis, also Al. Wright, an old-timer, and for several years a dispatcher on the Balto. & Ohio Ry., are running trains here. Fred. L. Cowles is operator at Pueblo, Col.; Henry Spahr is at Thatcher, P. J. Flynn is agent; A. F. Schumann works days and W. P. Clark nights, and Miss R. L. Boyles is manager of the W. U. Tel. Co. at Trinidad, Col.; E. M. Watson is at Morley, D. A. Wilkison at North Siding, G. A. Bross at Raton, N. M.; C. E. Harney at Otero, N. M.; J. W. McCoach at Springer, and J. D. Bruner at Watrous.

Roy Thompson is at Sterling, Kan.; J. B. Daniels at Raymond, Kan.; L. S. Clark at Ellinwood, F. M. Burson at Great Bend, J. M. Vanaken at Pawnee Rock, J. R. Thomas at Larned, H. F. A. Wheelihan at Kinsley, A. E. Teed at Offerle, A. Kingkade at Spearville, L. L. Angell at Cimarron, Jas. O. Heron at Pierceville, J. H. Waterman at Lakin, C. H. Logan at Syracuse; L. F. Gault, days, and F. L. Strickland, owl, at Sargent; C. L. Wheeler, days, and G. L. Armstrong, owl, at Granada; G. W. Wrightman, days, and G. W. Holloway, owl, at Prowers, and D. J. Lindsey at Las Animas.

LA JUNTA, Col., June 8, 1881.

### Telephonic Phenomenon.

To the Editor of The Operator:

SIR: I send you a very singular occurrence which happened here some time ago, as related to me by an operator who was here at the time.

We had connecting the office with a house an acoustic telephone, put up in the usual manner, by being insulated at each end, the small wire running direct to the diaphragm, and suspended at the supports by the usual twine loop. One afternoon, during a very hard hail storm, the hailstones falling very rapidly and of considerable size, I was attracted to the telephone by a loud sound, and thinking some one at the house was calling, I stepped over to the instrument to answer. I had a large meerschaum pipe in my hand at the time, holding it by the bowl, and as I was about to answer, I brought the amber mouth-piece of the pipe nearly in contact with the small wire. Instantly a discharge took place. A steady stream, or a regular voltaic arc, formed, igniting the amber, but I felt no shock. I drew my hand away, finding the amber partly burned. I then tried a piece of clip paper, holding it near the wire, when instantly it took fire with a report similar to the discharge of a Leyden jar. I felt considerable shock this time. Thinking that the wire had become crossed with the San Francisco and Portland wires, I examined it, but found it all right, and that in no way could it have short circuited the large main batteries in the battery-room. Still, to verify it further, I found that a telephone across the street was similarly affected.

Now, as to the cause of this singular disturbance: It did not seem to be atmospheric, as no indication of that condition was manifested on the Morse instruments. Was it frictional, produced by the rapidly-falling hailstones on the wire? Or was it the discharging of each hailstone, charged with a high positive potential from the upper atmosphere, as it came in contact with the wire? The wire being of some length and insulated at supports by dry twine, and as no rain fell with the hail, may have acted



as a condenser, which, by the rapidly-falling hailstones discharging themselves, kept itself charged, and on bringing my hand near the wire discharged itself, thus establishing an equilibrium of the opposite tensions. Its very high potential showed it to be static electricity. This natural condenser lasted as long as it hailed but no longer. C. L. H.

YREKA, CAL., April 15, 1881.

#### Another Tired Manager.

To the Editor of The Operator:

SIR: In reply to the highly improbable statement of your correspondent "Tired," of a few issues ago, asking as to the time operators were made to work, I think that his statement was an easy one as compared with what our W. U. friends, Messrs. N. J. Petrich and T. W. Milburn, of the W. U. here, have to do, both in hours and in labor. The manager opens the office at 5.34 A. M. for signals, and the office is not closed until 2.30 A. M. following, and oftentimes even later, 2 1/2 hours operating work straight, but from 8 to 10 P. M. both are at work, making the day solid. Further, the manager has no clerk, but keeps his own books. They are the best worked men that I know of, and inform me that no extra pay is allowed them, although allowed everywhere else. They handle Associated Press, have an interminable string of specials to send, and even more to receive, as we have a live, enterprising *Daily Express*—which is bidding fair to rival the celebrated *Galveston News* in the shape of telegrams—and endless reds.

ALAMO.

SAN ANTONIO, Texas, June 8, 1881.

#### Milwaukee Melange.

To the Editor of The Operator:

SIR: Regarding the expected changes at 89 Michigan, nothing definite can be learned at this time. It is generally surmised, however, that Mr. E. M. Shape, of the Western Union, will be placed in charge of the combined forces. There will probably be many changes of positions among the force, but that it can be materially reduced without detriment to the service is improbable, and consequently such result is not looked for. The rumor that Mr. W. H. Kelsey, manager of the Telephone Exchange, was to be put in command is authoritatively contradicted.

Mr. E. J. Peabody, late manager of the American Union, is also spoken of for some prominent position, just what does not appear, though probably a Western superintendency.

From Minneapolis comes the announcement that Mr. J. W. Booth, formerly manager A. U., in that city, has been appointed manager, to succeed Mr. L. R. Robertson. Nothing is known regarding St. Paul office.

Mr. O. C. Wells, formerly of the W. U., this city, is now working in Chicago.

OCTOPUS.

#### Burlington (Iowa) Notes.

To the Editor of The Operator:

SIR: On the first of March Mr. A. C. Man, ex-Manager of the A. U. Co., relieved Manager Ludwig of the W. U. Mr. Man is an old and experienced W. U. operator and is well qualified for the place. The day force consists of the two Heldorfer Brothers, Messrs. George and Tony, assisted by Mr. Adam Greoltz. Mr. Fred E. Keene is night manager, and takes the N. W. press. Mr. S. C. Courtright keeps the books in fine shape, and also keeps the boys in good spirits by his unlimited good nature and puns.

JOSH.

#### Albany (N. Y.) Notes.

To the Editor of The Operator:

SIR: We, that is, the "gentlemanly operators" of Albany, have been groaning under a sense of importance ever since Ex-Senator Conkling and "me too" have kicked up such a rumpus, and we take a kind of fiendish delight in having copy enough to make the boys in the country towns of New York, Boston, Chicago, Buffalo and Cleveland exclaim: "Sa hw mh more u got." Of course, we are asked a thousand times a day, from the still more rural offices: "What was the ballot to-day?" but we haven't time to vouchsafe any other reply (or one that is any nearer the truth) than: "Dnt no."

Our force has increased somewhat since the 20th ult. The genial and artistic "old timer," Putnam, is with us. So also, *pro tem*, is A. A. Wiley, of "135," who manipulates either side of the N. Y. quad with ease; likewise C. E. Davis, also *pro tem*, from "135."

Business is waxing hotter and hotter; consequently, the sum total of "extra" grows larger. But as this is not a business letter, I'll "let up."

C. M. SMOTHER EVE.

### TELEPHONE DEPARTMENT.

The school-houses of Rochester, this State, are furnished with telephones, at an annual cost of \$800.

In the Russian language "hello" is rendered "Tzijakanfitkranjanjanski," hence the unpopularity of the telephone in Russia.

Prof. Strong, of Chicago, claims to have recently discovered a practical method of transmitting and receiving telephonic messages through non-insulated wires placed in lakes or rivers.

Prof. Dolbear, of Tuft's College, one of the original inventors of the telephone, whose rights were bought by the Western Union Telegraph Company, has now invented an entirely new telephone, through which it is claimed conversation can be heard over any length of wire.

The United Telephone Company is extending its operations all over England. It has about 5,000 subscribers in the United Kingdom, but is now pushing its business very rapidly, having convinced the British public of the immense utility of the telephone for commercial purposes.

The narrowness of the principle and the great pecuniary interests involved in the discovery of the telephone have given rise to much litigation. At the Patent Office it is said that up to the present time about 250 different patents for telephones have been granted. A short time ago there were 55 cases of alleged interference in telephone patents before the office.

Admitting that the winds cause shock-like vibrations in telephonic lines of communication, and so disturb at times the distinctness of messages transmitted, M. A. Graiffe thinks that a remedy for such perturbations can be found by causing the telephones to speak by electric action of sufficient power to completely subdue accidental currents produced in the wires.

It takes nerve and patience and good temper to make a good telephone operator, and those who lack any one of these essentials had better let the profession alone. Only one person out of five on the average has a good telephone voice. They speak too low or too loud. Not more than one person out of twenty has the voice which a telephone operator should have—pleasant, even, plain and devoid of peculiarities. Let one of the best operators talk to you over twenty miles of wire and you will fancy that he stands beside you.—*Free Press*.

The telephone nearly scared the wits out of Secretary of State Blaine the other day. Senator Conger, of Michigan, called at Mr. Blaine's house, but as the latter was then at the State Department his servant announced Mr. Conger's arrival over the telephone. The streak of blue fire that came back over that circuit, and the stray repetitions of Mr. Blaine's old speech about singed cats, turkey-cocks, etc., were only accounted for when it was learned that Mr. Blaine understood the telephone to say that Mr. Conkling was at his house.

Mr. Church, Secretary of the Japanese Consulate of this city, is lying at his home in Passaic in a dangerous condition. He was out driving with his wife and her father and mother on Decoration Day. As they were returning from Newark on the Boulevard they were struck by a telephone wire hanging over the road near Grand street. Mr. Church was thrown from the carriage and landed on his head. Mrs. Clemons, his mother-in-law, was caught under the chin by the wire. Her jawbone and several teeth were broken and her face cut and bruised. She is confined to her room. Captain J. W. Clemons, who has a place of business in Ann street, had his eye injured.

The American Bell Telephone Company, of Boston, has brought suit in the United States Court in Brooklyn against the Metropolitan Tele-

phone Company, the Brooklyn Central Telegraph Company and seventeen defendants who live in Brooklyn, for an alleged infringement upon its patent. The complaint sets forth that Alexander G. Bell, of Massachusetts, was granted letters patent on March 7, 1876, for a new and useful improvement in telegraphy. These were assigned on the 22d of June, 1880. There are now 100,000 electric speaking telephones in use, and but for the alleged wrongful acts of the defendants it is alleged the plaintiff would have enjoyed the sale and exclusive right to use this invention. The defendants, the complaint avers, have jointly made, sold and used telephones embracing inventions secured to the plaintiff.

Referring to the transmission of church service by telephone, Mr. W. J. Jenks, Superintendent of the Brockton (Mass.) Exchange, writes: "I had the pleasure of experimenting in May, 1878, with the first Blake transmitter which ever went out of the American Bell Company's factory at 109 Court street, Boston, for a test of this kind, and locating it at the Brockton Opera-house, gave to some twenty or twenty-five stations about town a satisfactory rendering of the cantata of "Queen Esther" by a chorus of over one hundred voices. The instrument was somewhat larger than the pattern since adopted and now in general use, and was, for this initial trial here, attached to a beam some fifteen feet above the stage, in a slanting position, the opening downward. The choruses were especially fine, and even the solos were distinctly understood. For more than a year after this time a transmitter was regularly used at all entertainments here until the growing business of the Exchange obliged us to discontinue it. For two years past musical entertainments have been superceded by church services, the best place for the transmitter being found to be directly in front of the speaker, and firmly fixed upon a bracket on the desk. Carefully adjusted, with two cups of Calaud battery attached, we have secured really surprising results, frequently connecting six to fifteen circuits, carrying from four to ten subscribers each, and enabled from thirty to fifty persons to listen at once. Yesterday, for a test of the lines just completed to Boston and Taunton, these two cities were connected with the First and Porter Congregational churches successively. Rev. H. L. Kelsey, of this city, and Rev. Mr. Julian, of New Bedford, gave discourses which were listened to by interested officials and operators in Boston, Salem, Newburyport, Gloucester, Taunton, Fall River, New Bedford and Providence, these points being simultaneously connected. The music, from the farther extremity of the church in each case, was highly enjoyed.

### DASHES HERE AND THERE.

Edison has now told a reporter that he expects to light the whole of this city in two years and a half.

Can any one tell about how much of the portable battery, or bottled electricity, is equal to a demijohn of Jersey lightning?

By and by, when the Mutual gets under way, the mushroom Continental will become materialized, with the old specialty, "reduced rates," at its mast head.

The report of the superintendent of the U. S. Electric Lighting Company shows that more orders for machines and lamps have been received than can be filled during the next six months.

Messrs. Davis & Watts, in a change in their advertisement in this issue, offer a lot of handsome nickel-plated bells at less than cost of manufacture. See their advertisement, last page.

Only one telegraph line is in operation in China, from Shanghai to Woosung, twelve miles. An effort is now being made to extend the wires to Tientsin, but the native mandarins are opposed.

The trial of the electric light in Saratoga Springs proved a great success the other night. The lamps gave an even and brilliant light, and the test may be regarded as determining the adoption of it there.

Messrs. L. G. Tillotson & Co. have a handsome display of annunciators, burglar alarms, wall bells, push buttons, etc., in our advertising columns to-day, which will prove of interest to many of our readers.



A report comes from Denmark that a watch-maker at Copenhagen has invented an electric watch of ordinary size, which is operated by a miniature battery that requires replenishing only once in six months.

It is now intended, if possible, to run trains on the railroad through the St. Gothard Tunnel by electricity, which is to be produced by the machines now employed in pumping air into the workings and for other purposes.

Sir William Thomson of Glasgow University, who has been experimenting on the box sent to him from Paris containing electric energy, has arrived at the important conclusion that electro-dynamical energy may be stored and used for great purposes.

During the past few nights the electric lights on Broadway, between Fourteenth and Thirtieth streets, have been very unsteady and at intervals the lights have gone out. As gas is not in use between these points the street has at times been totally dark at night.

A telegram dated London, June 7, says that the Central & South American Telegraph Company of New York, has secured exclusive contracts for telegraph purposes from the governments of Peru and the United States of Colombia, embracing the Isthmus of Panama and the west coast of South America.

A dispatch from Berlin, on the 8th inst., says that a dynamite mine has been discovered under the metals close to the Gatchina Railway station, connected with a battery in the railway telegraph office. All the telegraph officials have been arrested. The Czar has been residing at the Gatchina Palace since the assassination.

Just how Mr. Longstreet can afford to sell a complete set of telegraph instruments—Western Union curved lever key, American Union pattern relay and Giant sounder—all for \$12, is more than we can understand. He does it, however, and the instruments give the best of satisfaction. See his half-page advertisement in another part of this paper.

In his address at the annual meeting of the Petroleum Exchange, on the 3d inst., in this city, President George H. Lincoln said that the telegraph consolidation had impaired the telegraphic facilities of the oil trade, and suggested that the oil interest should build a telegraph line for the use of the trade between New York and the oil regions.

A suit has been commenced in the United States Circuit Court at New York by the Weston Electric Light Company for infringement of one of the Weston patents on electric lamps. The patent was recently issued to Mr. Weston after a long contest in the Patent-office with Mr. Brush, and is said to cover very important features of the Brush system.

When the cable rates are again reduced to twenty-five cents or less per word, there should be a clause inserted in the rules that all Dutch words must be paid for at the rate of two dollars and a half each, nine-tenths of the amount to be divided equally between the operators. Every man should be enabled to respire regularly and freely, or if otherwise, to be recompensed therefor.

Professor Morangoni shows by a conclusive set of experiments that moist air is not a conductor of electricity. He proves that the loss of current in telegraph wires and the want of action in electrical machines during misty or wet weather are due to the condensation of moisture, carbonaceous deposits, adherent dust, spiders' webs, or the contact of branches of trees.

A curious story came by cable from Berlin on the 6th inst. It relates that a horse while crossing the electric railway, having set his hoof upon the rail, was instantly thrown down, so strong was the current; and another horse, having also touched the rail with his iron-shod hoof, received a shock which sent him galloping off in wild terror.

Sir William Armstrong, at Craigside, near Newcastle, England, has utilized a brook to run a dynamo-electric machine by means of a turbine water-wheel, and so manages to secure electricity enough to keep 37 Swan lamps in a state of incandescence in his house. In this case the motive power costs nothing, and electric lighting in this way is an exceptional luxury.

What a change a few short months sometimes work in the spirit of our dreams. A little while ago, every artist—and still more so, every would-be artist—held the key of the situation, as he thought, in his hand. He wouldn't take this position; he wouldn't work for that; his terms must be complied with—and now he is taking firm hold of himself by his coat collar, as it were, in the laudable attempt to drop into a solid spot.

On Sunday, June 5, during a thunder storm, the instruments at the D. & H. C. Co.'s office, White Mills, were completely demolished by lightning, although the pins were all in and the switch-board is furnished with lightning arresters. This simply proves that the wire from the switch-board to the ground was insufficient to carry off the electricity coming in on the wires, a fault often found in telegraph offices.

One of the most uncomfortable errors of the telegraph that has recently come under our notice was that explained in a message lately passing through the Chicago office. A lady, probably addressing an absent lover, says: "I am not married—mistake for worried." The mistaken words may be regarded as synonymous in more senses than one, yet no one will doubt that it made all the difference in the world to the young man.

The local gas company, accepting as a challenge the admiration evoked by the Swan electric lamps, at present lighting the thoroughfares of Newcastle, England, recently placed at the corner of one of the streets, in close contiguity to the electric light, one of Bray's three-light lamps. The lamp was obscured at the top, and the effect is described as very striking, its illuminating power being pronounced excellent. The advocates of gas-lighting obtained a victory for the old over the new mode and power of illumination.

There are certain difficulties in the way of safely lighting fiery mines even with the incandescent electric light, but these are by no means insuperable. The Swan system is about to be introduced into the Watson Colliery at Earnock, England, and the world will soon have the benefit of the experiment. The dynamo-electric machines will be set up in an engine-house at the colliery, and the electric cables will pass down from the nearest pit-shaft to the lamps in the workings. It will be some time yet before a crucial test is made. The engineer in charge says that the preliminary operations will take up two months.

From all that has been done during the last few years, it is quite evident that the art of transmitting power by electricity has advanced rapidly, and that its practical application is continually gaining ground. This, however, Mr. Alexander Siemens thinks, should not be regarded as a sign that the electric transmission will supersede every other system of transmitting power to a distance, but rather that there is a sphere for it, where it meets existing demands better than our present means, and it should, therefore, not be treated as an enemy of existing systems, but as a supplement to them, by the aid of which problems can be solved that could not otherwise be attempted.

Remarkable electrical phenomena are added to the earthquakes, floods, storms and comets that have already made this a year of marvels. About a week ago some of the people of Brooklyn were startled by an enormous fireball that is said to have exploded in the air over the city with a deafening report. On Sunday a similar fireball burst with a great noise close by the new statue of Gen. Kearney in Newark. Strange forms of lightning have been seen in England of late. Many scientific men trace a close connection between the excited condition of the sun and electrical displays on the earth. As the sun has not yet reached the culmination of its period of disturbance, yet more startling outbursts of nature's forces in our atmosphere are likely to be witnessed during the ensuing summer.

A meeting of 1,200 postal telegraph employés of London was held in that city on Saturday evening, June 11. Resolutions were passed calling a national conference of telegraph operators to be held in Liverpool in three weeks, and pledging the meeting to abide by the decision of that conference. Another resolution was unanimously passed, agreeing to strike if that

course of action should be decided upon. The meeting resolved to take immediate steps to bring about a total cessation of extra or overtime work, which appears to be a grievance, as also is the recent statement made in the House of Commons by the Right Hon. Henry Fawcett, Postmaster General, that overtime work is often voluntarily submitted to, and that when volunteers are not forthcoming, it is fairly allotted by ballot.

The electric street railway of Dr. Siemens, in Berlin, was opened for public travel on the 12th of May, with much success. A number of prominent officials and scientists were present. It is a narrow-gauge elevated street railway, mounted on posts placed on the street sidewalks something like portions of the elevated railway in New York, but on a smaller scale. The new railway is located on the outskirts of Berlin, and extends from the suburb known as Lichterfeld to Yeltow, a distance of about two miles. The passenger cars are narrow and short, carrying only 14 passengers. There are two tracks. The cars are propelled by a dynamo-electric machine, which receives electricity through the track and a suspended cable, from an electric generator, one at each end of the line, each generator driven by a sixty-horse engine. An average speed of twenty miles an hour was expected to be realized.

Mr. Alexander Siemens says that if the electric railway at Lichterfelde continues to work in a satisfactory manner it is to be extended, and there is no doubt that its success will greatly assist in the further introduction of electrical railways, either on the level of the streets or elevated, like the steam railways of New York. Over any other system, worked by steam or by compressed air, the electrical has the advantage that no heavy machinery has to be carried about to set the train in motion. The carriages can, therefore, be built in a lighter manner, thus reducing the power necessary to move them, and permitting all bridges and other superstructures to be built more cheaply than usual. Several carriages, each with a dynamo machine, can be joined to one train, and by this distribution of the motive power much steeper inclines can be overcome than when the same train is drawn by a single locomotive.

The new telegraphic management might look into this model telegraph office, an account of which we clip from the *Willimantic, Conn., Journal*: "Probably no lightning was ever so dumbfounded as the misguided and erratic streak that wandered into the telegraph office, at the west end of our shed depot, on Sunday afternoon. Whether it was thunderstruck, as it were, by the fearfully dilapidated condition of the alleged building, to which it had taken the trouble to gain surreptitious entrance, or was dismayed and demoralized by the overwhelming stench that pervades the place, or was afraid to proceed in its work of destruction against such fearful odds, is a matter for speculation, but certain it is that the fiery fluid was content with the cremation of the operator's trunk (a paper collar box) and contents and sneaked out, leaving its black mark of disgust on the switch-board."

The inventive genius of the United States will be fairly well represented at the Paris exhibition of electricity, though not perhaps as completely as it might be. Mr. Edison sends a large array of apparatus and devices. The visitor to the exhibition will be able to order a dinner cooked on an electric range; to study the workings of an electric machine which detects and measures odors; to see pure iron separated from black sand in an electric sieve, and bran separated from flour by another invention; to observe the workings of electric buoys and electric brakes, and to muse upon the progress of the age as he wanders among phonographs, telephones, electric motors and dynamo machines. The really practical and important feature of the exhibition will be the electric light. Of these there are now half a dozen which have been brought measurable near perfection, one or two needing only some slight modifications to realize the dreams of their inventors. A comparison of methods and results and a careful study of each other's apparatus cannot fail to be fruitful in valuable suggestions to the electricians of all countries.



## NEW YORK CITY ITEMS.

## Echoes from 195.

In anticipation of the rush of business from the summer watering resorts, ten new quadruplexes are about being added to the machinery of the office.

A recent applicant for a situation at 195 inclosed a tin-type photograph of himself, with the signal "73" scratched on top. This style of application shows a fraternal feeling which is highly commendable.

Wire Chief F. W. Cushing will start for Paris, France, about the 10th of July in the interest of the Gray Harmonic System. He will make a stay of three months abroad, and, as he speaks French fluently, no doubt his visit will be enjoyable.

The following notice of two of our young lady operators who passed their vacation South appears in the Nashville *Daily American* of May 31:

"Miss Willie M. Newland and her charming friend, Miss Minnie Hahr, of Hoboken, N. J., who have been visiting Nashville the past few weeks, returned to New York City Sunday evening, much to the regret of many admirers."

The talented young ex-vice-president was mentioned by his father-in-law, while giving evidence in the Williams suit, a few days ago, as "an active young man." If the story be true that on a certain occasion in the past he visited the General Manager, with fire in his eye and danger in his tread, it might have been added that he was also a brave young man. However, the General still lives.

## Other City Items.

Mr. Geo. B. Scott, Superintendent G. & S. Tel. Co., of this city, delivered a lecture before the Albany Electrical Association on Wednesday, June 8, on "Electrical Measurement."

"Our office," says an American Rapid correspondent, "puts one in mind of the famous English Company that was raised during the war, which consisted of ninety-nine officers and one man. The man was drilled to death!"

Mr. J. H. Bunnell has just returned from a visit to Mr. Henry Van Hovenbergh, at his interesting retreat in the Adirondacks. He says that the trout, the air and mountains there would keep him all summer, were it not for the pressure of his rapidly extending business here.

Mr. B. M. Plumb, formerly of the executive offices of the A. U. Tel. Co., this city, has resigned to accept the Presidency of the Fabric Ornamenting & Manufacturing Company, with headquarters at 56 Cedar street, New York. Mr. Plumb, who is a gentleman of uncommon energy and ability, has many friends among telegraphers, who will regret his retirement from the business.

A dispatch was received in this city stating that Mr. Jay Gould had been shot. The dispatch was suppressed until an investigation could be made, which resulted in disproving its correctness. The investigation, however, resulted in disclosing the fact that a syndicate exists, having branches throughout this country and Europe, with an agent constantly traveling between the two countries, which has for its object the promulgation of news designed to depress the market value of railroad stocks and other securities, grain, etc.

## PERSONAL.

A. G. Taylor is with the Oil Pipe Line at Osborn Hollow, N. Y.

Lady Allan, wife of Sir Hugh Allan, President of the Montreal Telegraph Company is dead. Sir Hugh is in Europe.

Any lady operator who would like to exchange a Northern or Western office for one in the South, address EARNEST, care THE OPERATOR.

Mr. C. W. Ross has resigned his position as W. U. Assistant Superintendent at Columbus, O. Mr. Ross is Vice-President of the telephone company in that city.

The public services of the Palatinate Literary Society, of Palatinate College, take place to-day, June 15. Mr. W. W. Weigley, of Myerstown, Pa., is chairman of the committee.

Mr. J. W. Haynes, of the Columbus W. U. office, has accepted a position with the L. & N.

Ry., at Evansville, Ind. Mr. Ed. S. Rose, of the Panhandle Ry., Columbus, fills the vacancy.

C. W. Potter, late chief repairer W. U. Co., Columbus, O., has taken charge of construction department for Southern Ohio Telephone Exchange Co., with headquarters at Portsmouth.

James Gamble has resigned the General Superintendency of the Pacific division of the Western Union Telegraph Company, the resignation taking effect June 10. He will remove to New York.

The President has appointed Norman Williams, of Chicago, Honorary Commissioner to the International Exhibition of Electricity and Electrical Congress, which convenes in Paris on the 1st of August.

Mr. Henry Bentley, the popular President of the Philadelphia Local Telegraph Company, who tips the scales at something like 250 pounds, rides a bicycle as nimbly and gracefully as any wheelman in that city. He rode over 300 miles in one stretch last summer.

The commencement exercises of the law school of the Columbian University at Washington, June 7, were a brilliant success. Mr. Will Haight, late operator W. U., and afterward on Dept. line, Washington, was President of the class of 1881, and Mr. John Arthur, late of the P. R. R. Company's Erie office, Second Vice-President.

Information wanted of Henry S. Judkins, operator, 25 years old, who has been gone from home for six years; last heard from at Lagrange, Ind., but went west from there. Any information concerning his whereabouts will be thankfully received, and what expense necessary gladly paid by his brother, L. F. Judkins, agent T. & I. R. R., Paris, Micasta County, Mich.

Mr. J. F. Howell, operator Atchison, Topeka & Santa Fe R. R., leaves La Junta, Colorado, July 1, to go to the Southern Pacific, and as a farewell from his present position sends us 41 new yearly subscribers to THE OPERATOR, with cash accompaniment, all from operators confined to his own division. As he journeys along the Southern Division he expects to considerably swell the list, and hopes that the telegraphers of that division will respond as unanimously to his requests for subscriptions as did their brethren of the Western Division.

When Mr. Jay Gould, in company with Sam Sloan and Sydney Dillon, was jaunting around in Pennsylvania last week, he remarked of a certain place near Scranton: "This place don't seem to have changed much since I ran the tannery here." So it seems that through all those years he can remember Charlie Pike of Wilkes-Barre, and still forget whether his check given last year was for ten or only five millions. An old admiral on his death-bed, once upon a time, could not confess his sins simply because he could not remember them, and so died in the peaceful thought that a bad memory is as good as a clear conscience.

Ex-Manager Bradford, of Providence, has been presented with a handsome gold watch and

chain. On the outside of the watch are engraved Mr. Bradford's initials, and a sounder and key, and on the inside the words: "Presented to Henry C. Bradford, by his many friends, on his retirement from the management of the Western Union Telegraph Office, Providence, June 1, 1881." The presentation took place at the Hotel Dorrance. After an excellent collation had been served the company indulged in pleasant speeches and recitations. Mr. Bradford was a prime favorite, both with his subordinates and the public.

The veteran, Mr. Geo. H. Wilkinson, is manager of the St. John's, Que., office, with Frank Richardson as chief operator and Arthur Freniere as assistant. At the Railroad office, L. E. Stevens is repeater for the St. Alban's wire and Mr. Harvey "Owl." At Farnham main office Wm. L. Hibbard is manager and P. E. Demers chief operator; and at the branch office F. X. Demers is manager and Miss Lizzie Williams operator. At Granby F. B. Farnsworth is agent and operator and at Waterloo city office, "Qo," Mr. W. J. Farbar is manager, P. Murphy operator and Chas. Dargneau assistant. At the "Wa" branch office, W. H. Frost is manager and Alex. Freniere operator, and at "Ro" branchoffice Mr. Rounds is operator and Miss Mills assistant.

## BORN.

VERCOE.—To J. H. Vercoe, W. U., Columbus, O., a daughter.

OWINGS.—To L. N. Owings, W. U., Columbus, O., a daughter.

COMSTOCK.—On Sunday, June 5, 1881, to J. S. Comstock, agent and operator, Walnut Grove, Minn., a daughter.

ROUSH.—May 26, to Mr. E. B. Roush, manager Western Union Telegraph Company, and agent of the Valley Railway, at Uniontown, Ohio, a daughter.

## MARRIED.

BACMEISTER—SMITH.—June 1, 1881, at Kansas City, Mo., by the Rev. E. C. Woods, Mr. Charles E. Bacmeister, of the W. U. Telegraph office, to Miss Ida M. Smith, both of Kansas City.

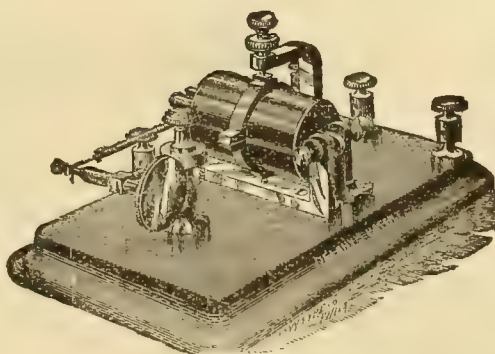
PEET—WILCOX.—March 9, 1881, at Portchester, N. Y., by Rev. J. Bastow, Mr. Frank A. Peet, of Canaan, Conn., to Miss Mattie A. Wilcox, manager Western Union Telegraph Office, same place.

FLEMING—CRAIG.—June 1, at the residence of the bride's parents, Wathena, Kan., by Rev. E. K. Miller, Mr. Charles A. Fleming, train dispatcher St. J. & W. R. R., St. Joseph, Mo., to Miss Minnie Craig.

## DIED.

HURLEY.—May 24, at Toronto, Ont., Timothy Edward Hurley, of the M. T. Co. force, aged 23 years and 11 months.

## THE DELANY RELAY AND SOUNDER.

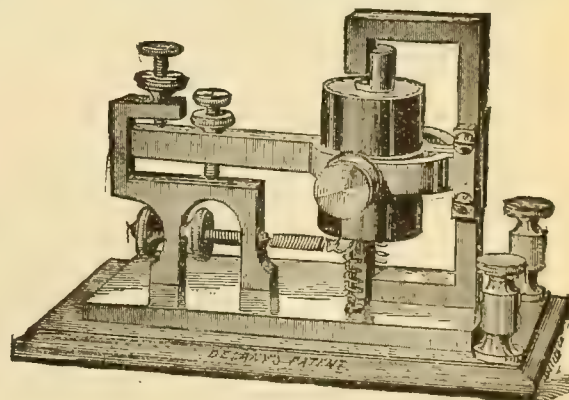


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The above cuts illustrate the Delany Patent Telegraph Relay and Sounder, now being manufactured and tested with a view to their general introduction on all Telegraph Lines liable to be affected by the Page Patent. These instruments are in all respects superior to any now in use.

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SOUNDER.

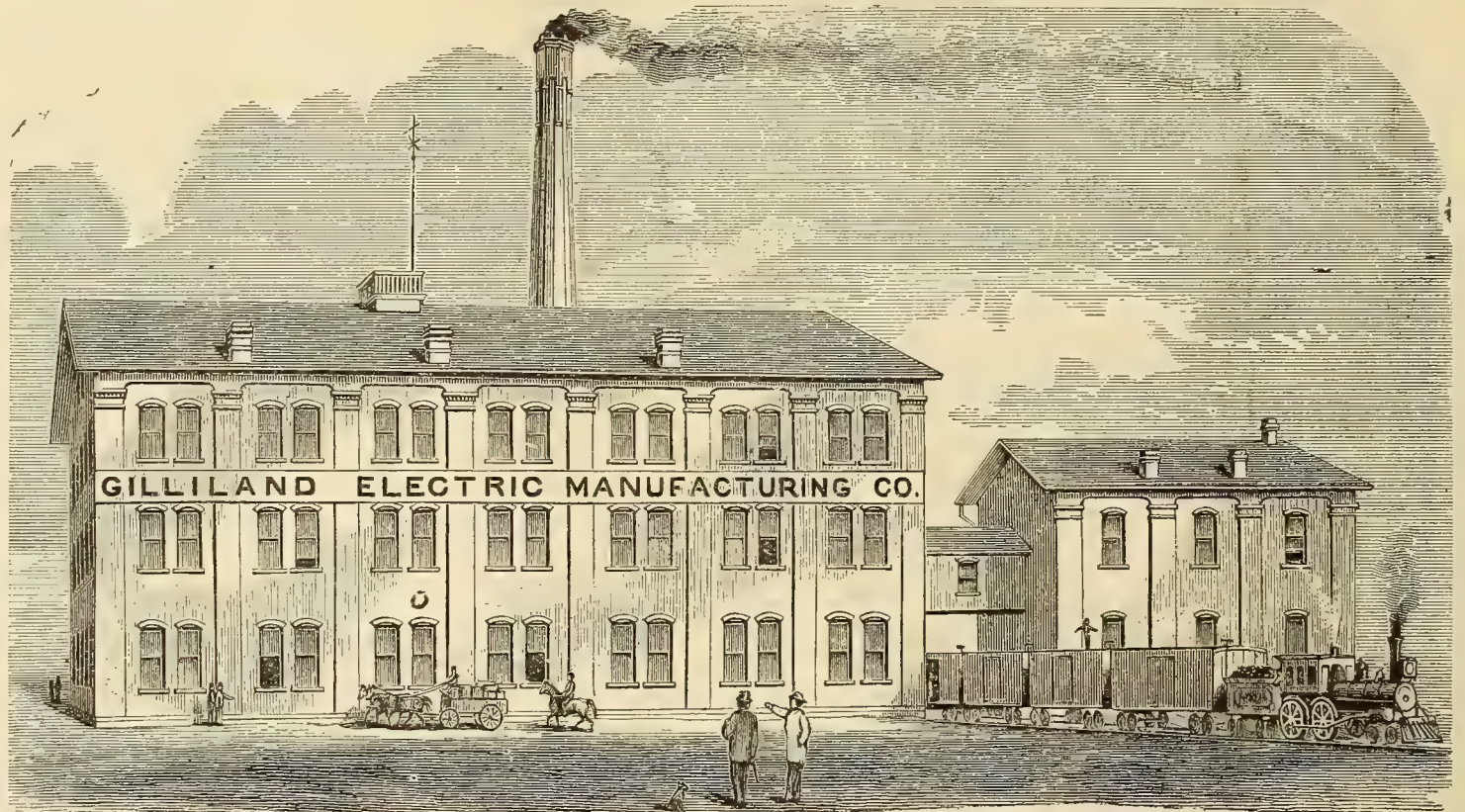


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Ground Wire  
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Pony Transmitter  
Batteries,  
Power Generators,  
Motors,  
Etc.

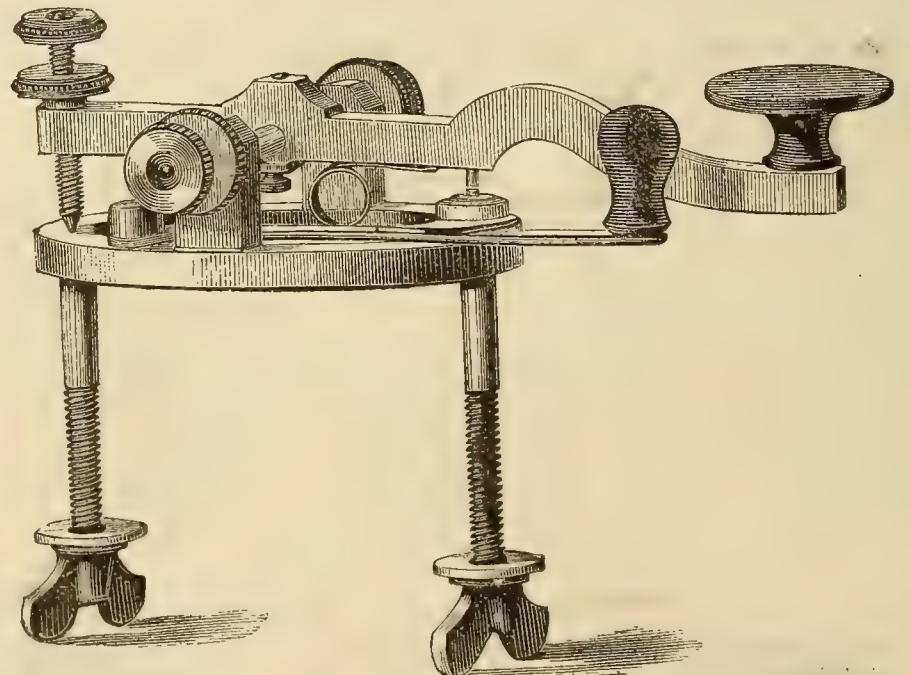
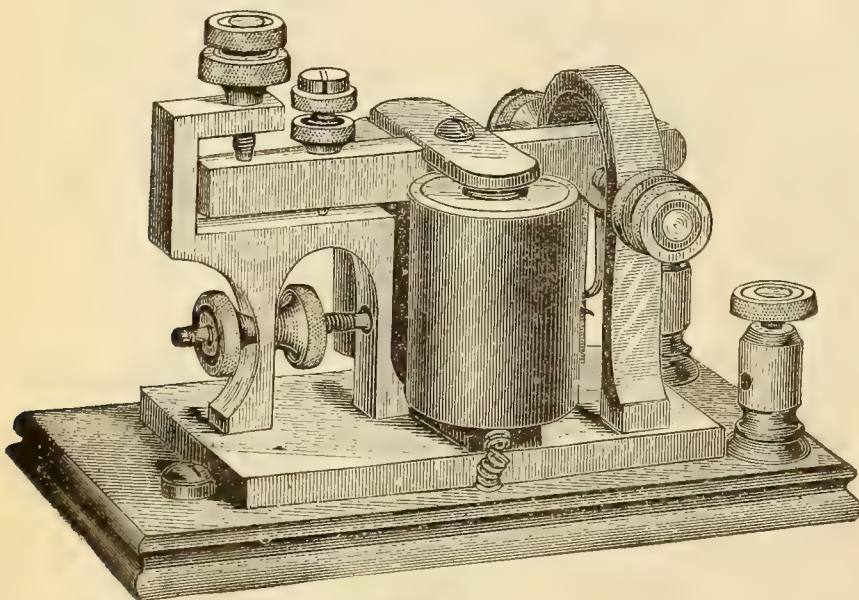


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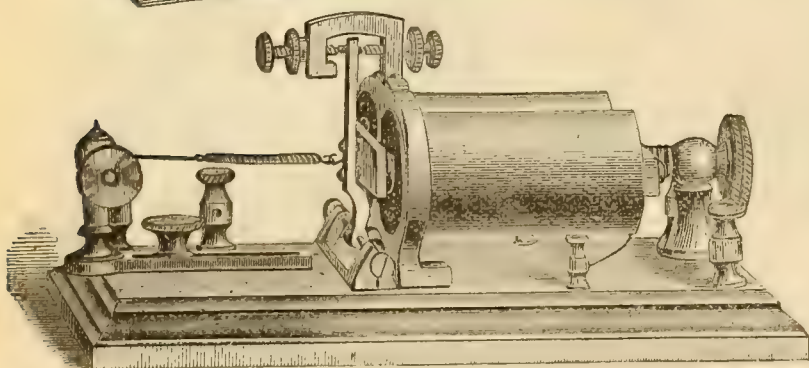
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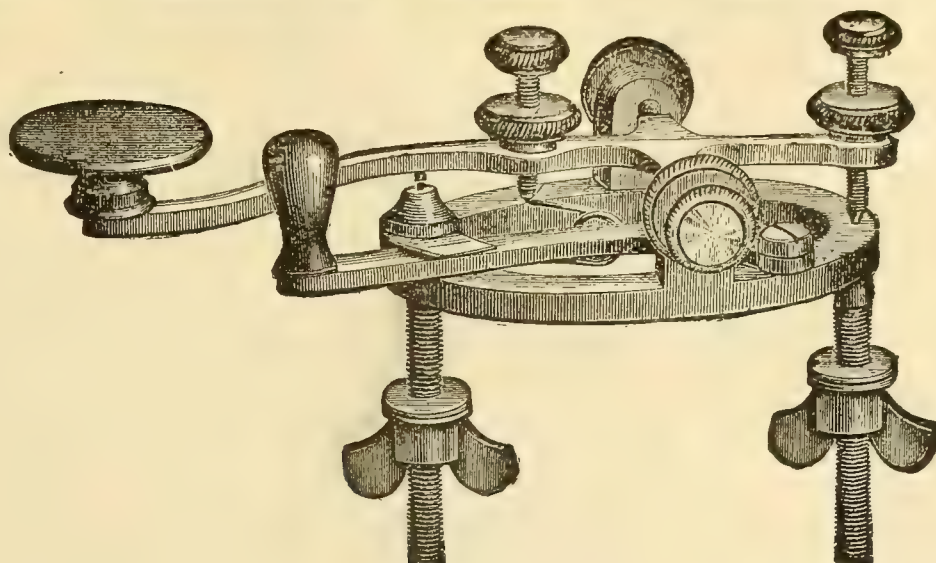
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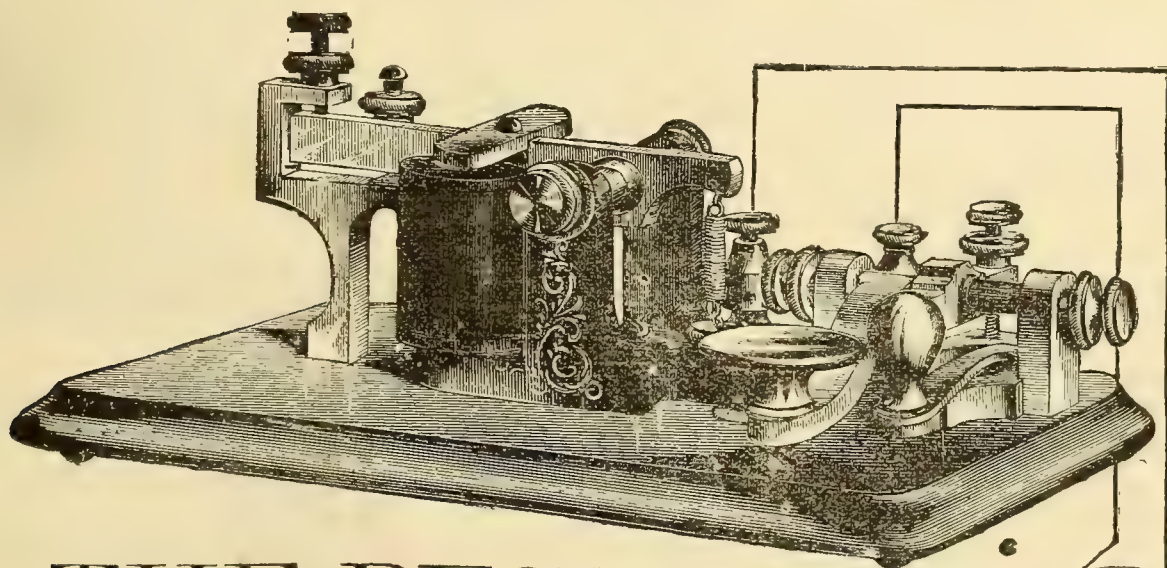
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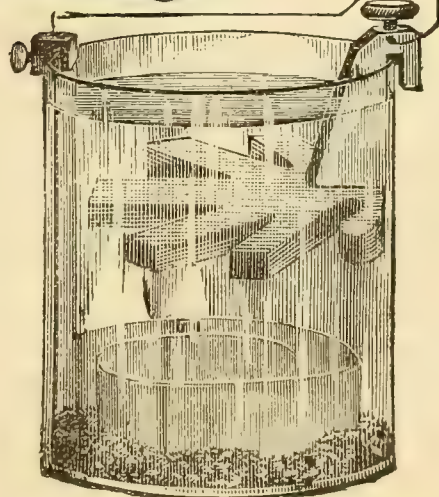
THE BEST.

Price, \$4.50, complete with Battery, Book of Instruction, Wire, Chemicals, and all necessary materials for operating.  
 "Morse" instrument alone, without battery..... \$3.89  
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- 3d. They continue exactly alike.
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- 5th. The first cost is less than any other.
- 6th. The connections NEVER corrode.
- 7th. Every part of the battery is exposed to view, and if a fault exists it is instantly seen.
- 8th. The water cannot evaporate.
- 9th. The sal ammoniac cannot escape.
- 10th. The parts are not liable to break.

With the introduction of the "LAW," the objection to the use of a battery in connection with the telephone sinks into insignificance, for the care is nothing, of injury or interruption to the service there is none, and the cost of maintenance is less than one cent per month.

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DIRECTIONS FOR USE.—Put in one-half pound of sal ammoniac and fill with water to the shoulder.

**PRICE, \$1.25 PER CELL.**

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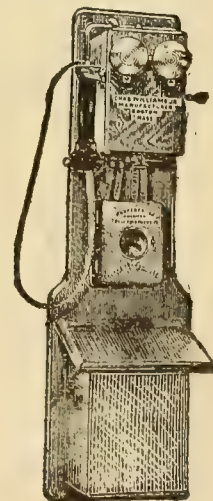
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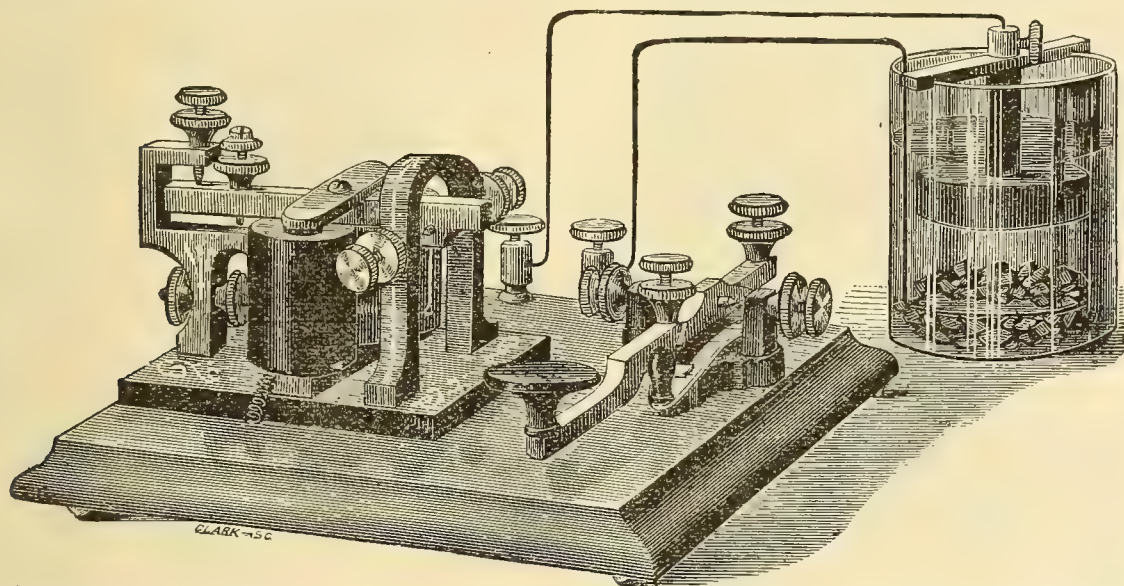
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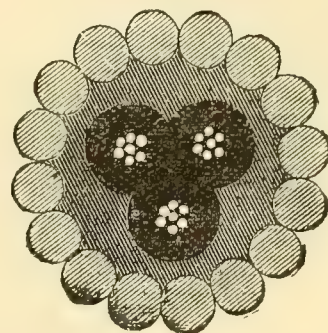
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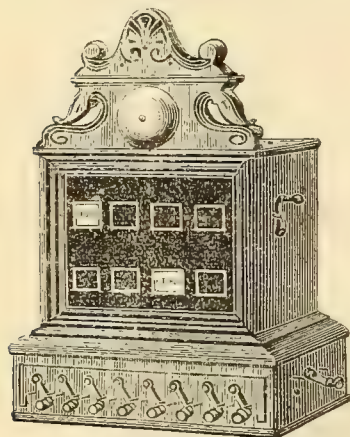
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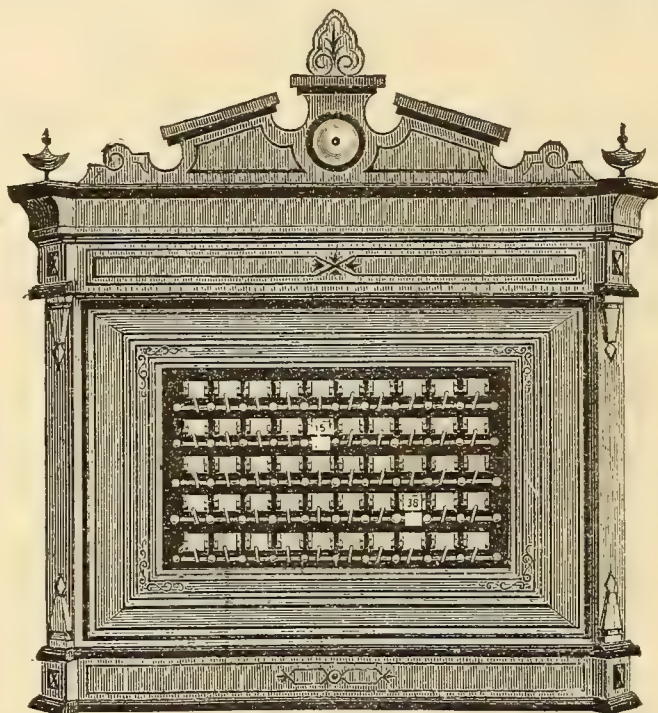


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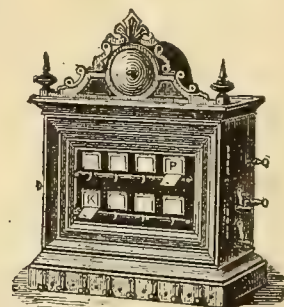
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For 4 rooms.....	\$16.00
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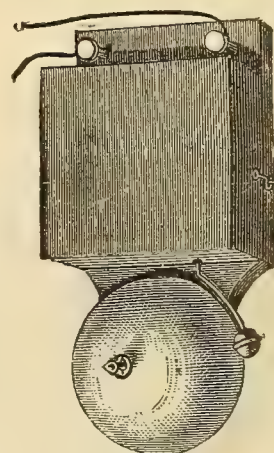
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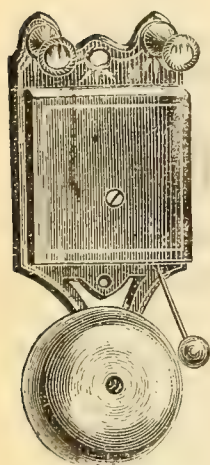


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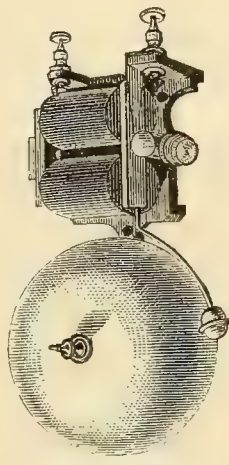
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" 6 "	.....	17.00 "	25.00
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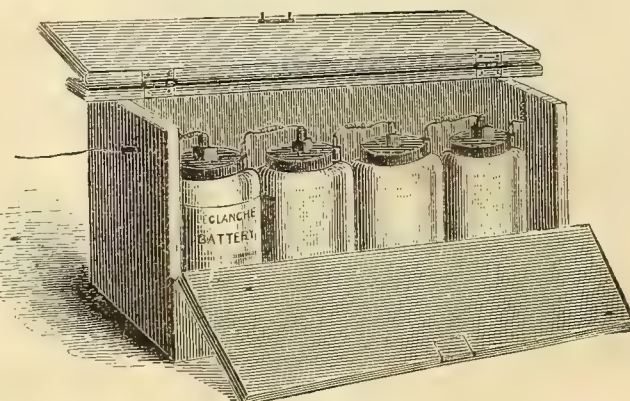
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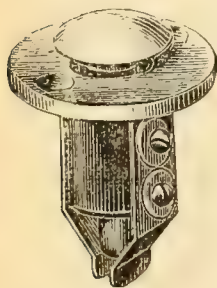


## WALL BELL,

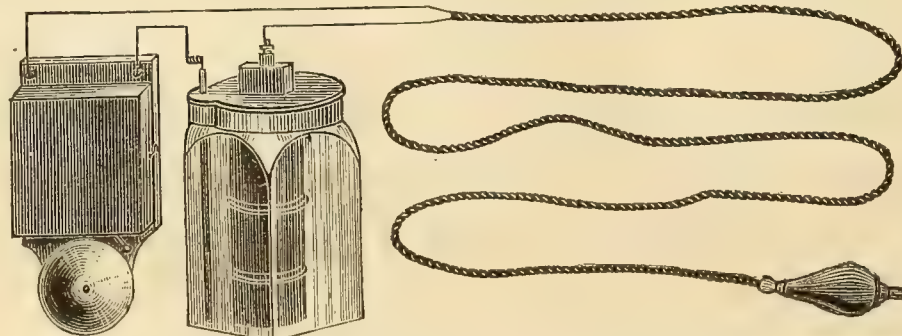


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3 Cells, Sealed Battery, in box.....	\$8.00
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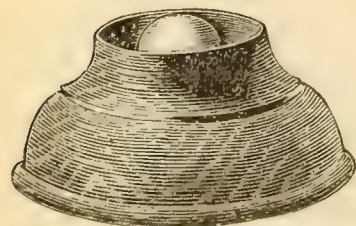
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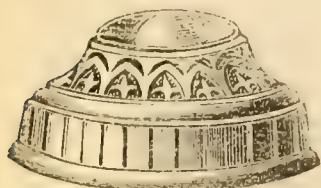
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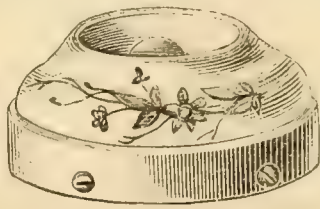
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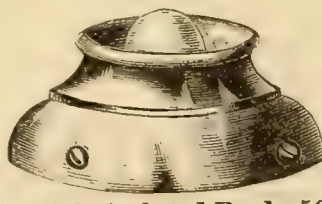
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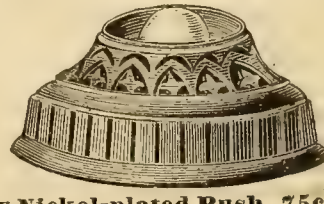
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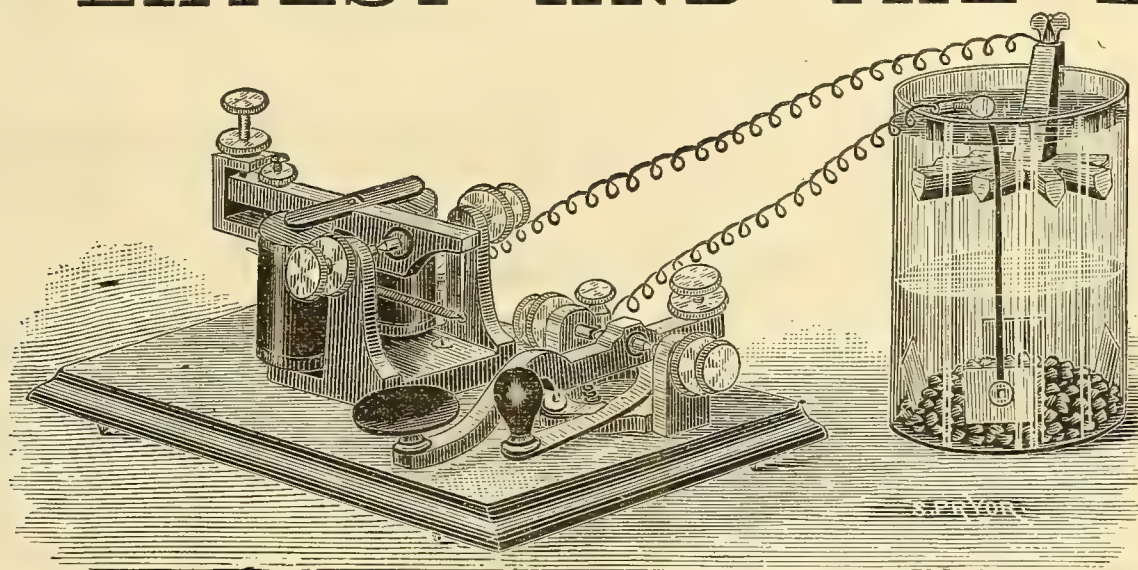
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The Earthquake Instrument, magnets wound with fine wire for lines		The Earthquake Instrument, sent by mail without battery.....	4.30
15 to 20 miles.....	4.50		

Goods sent C. O. D. when order is accompanied with funds sufficient to insure charges.

Remit by postal money order, draft or registered letter.

No special prices for quantities less than one dozen.

Money refunded if this instrument is not satisfactory, and acknowledged to be the best Learners' Instrument out.

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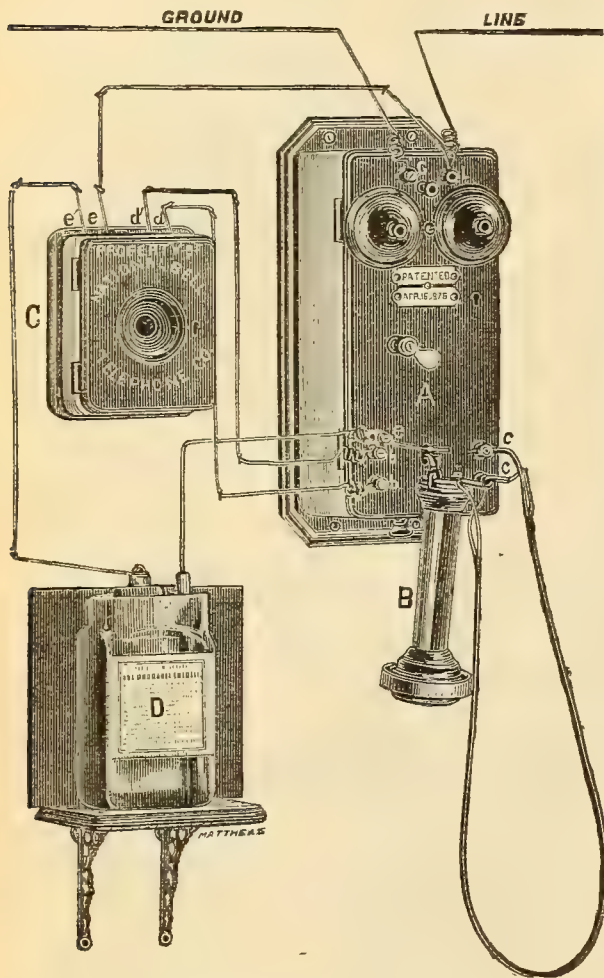
THE UTICA FIRE ALARM TELEGRAPH COMPANY,  
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106 and 108 Liberty Street, Utica, N. Y.



## The American Bell Telephone Company.

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This Company, owning the Original Patents of Alexander Graham Bell for the Electric Speaking Telephone, and other patents covering improvements upon the same, and controlling, except for certain limited territory, under an arrangement with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, the American Speaking Telephone Company, and the Harmonic Telegraph Company, the patents owned by those companies, is now prepared to furnish, upon application, either directly or through any of its agents, Telephones of different styles, and applicable to a variety of uses.

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in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

### PRIVATE LINE AND CLUB LINE

systems, for business or social uses. Also to introduce the telephone for

### SPEAKING TUBE

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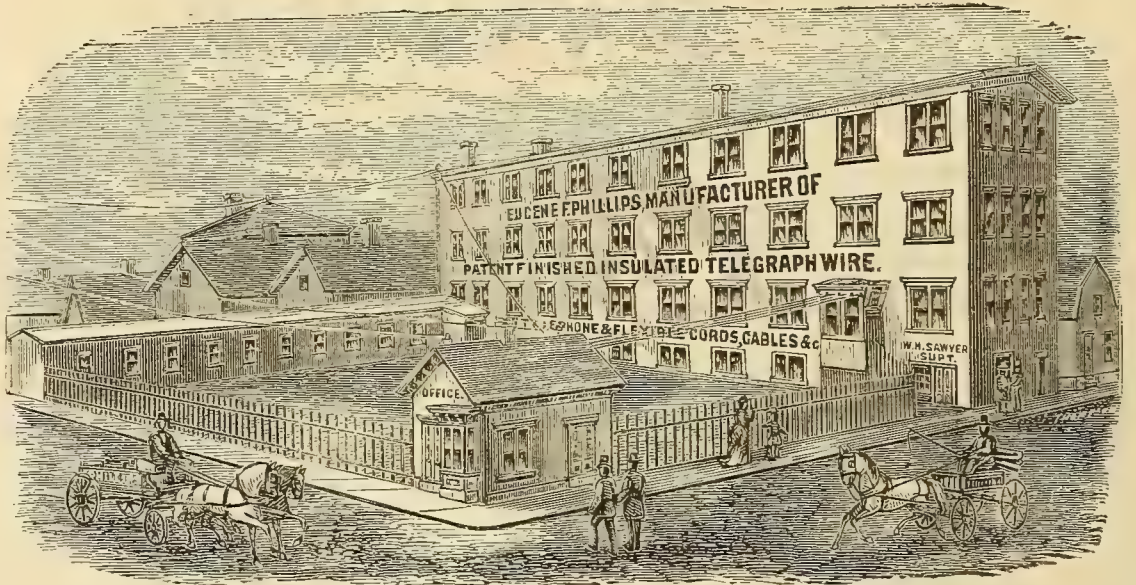
This Company will arrange for telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

We respectfully invite attention to this matter, and any further information relating thereto can be obtained from the Company,

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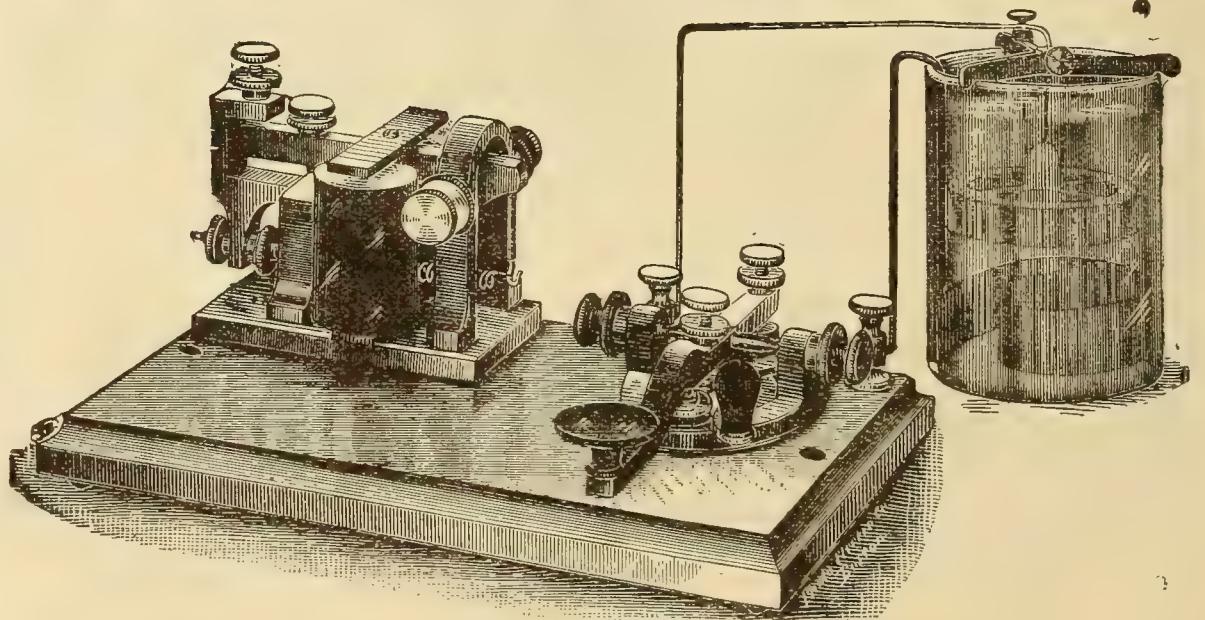
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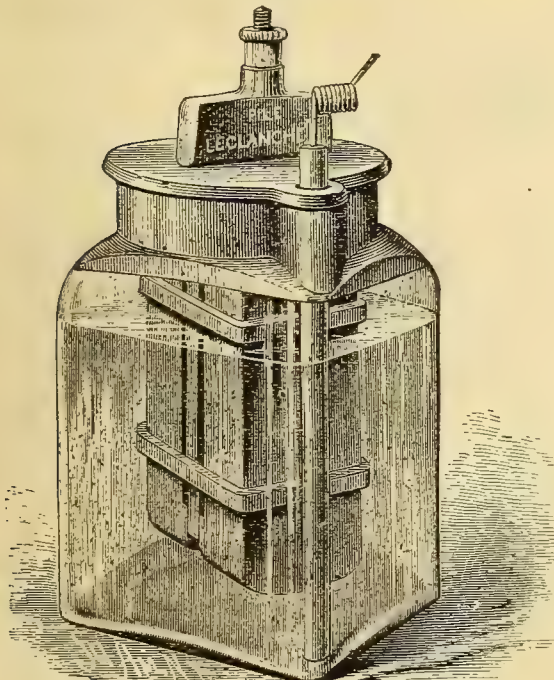
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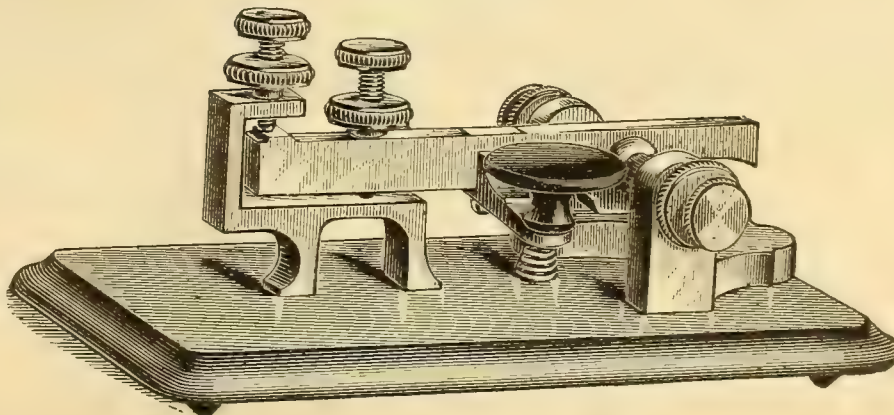
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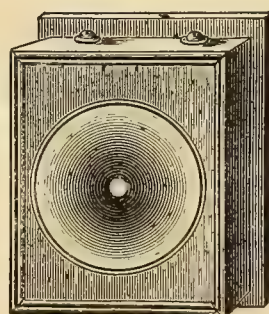
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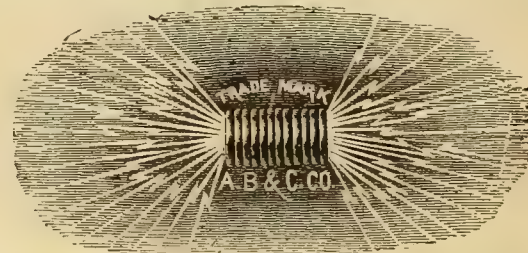
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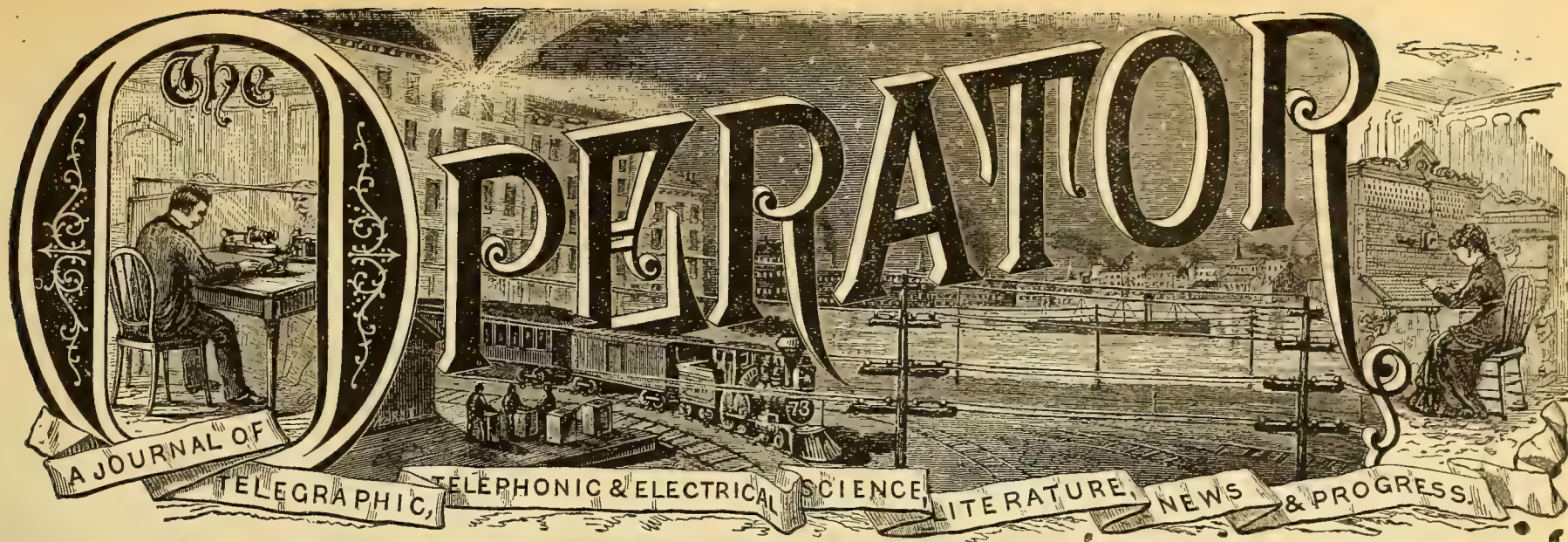
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VOL. XII.—No. 13.

NEW YORK, JULY 1, 1881.

{ ONE DOLLAR A YEAR.  
{ 5 CENTS PER COPY.

### THE SLAVES OF THE WIRE.

DEDICATED TO LORD F. CAVENDISH AND MR. FAWCETT.

Hark !

'Tis the telegraph clerk ;  
His eyes are red and his cheek is pale,  
For he toils each day from dawn till dark ;  
List, oh list to his pleading tale,  
And have of pity just one small spark  
For the telegraph clerk.

"I only ask for a man's just due,  
A fair day's work and an honest wage,  
And I claim the rights of my service, too,  
A pensioned rest in my gray old age.

"Do we ask too much for our days and nights?  
And is our demand for right a crime ?  
The poorest man in the road has rights,  
And he always is paid for his overtime.

"Am I servant or slave ? am I bond or free ?  
Weary I work the whole week through,  
There's seldom a Sabbath of rest for me,  
For the seventh to us is a work-day too.

"We are sick in body, in soul and brain,  
Though we plead for help there is no reply,  
And under the burden and mental strain  
Brothers and sisters sink and die.

"Justice and right is all we ask,  
A place defined in the service list,  
A fair reward for a fair day's task,  
And for this, in a body, we now insist."

Hark !

To the plea of the telegraph clerk,  
There's a fevered pulse in his heart and brain ;  
His hope is dim and his day is dark,  
How long shall we leave him to plead in vain ?  
How long shall the world on the wrongs remark  
Of the telegraph clerk ?

He gives unto words the swiftest wings,  
At the touch of his finger the dull wires speak,  
He holds in his hands the fate of kings,  
And he governs the world on a pound a week ;  
He rules the markets and guides the press,  
He toils by day and by night alike,  
Come, list to his story and give redress,  
Ere his cry shall change to the watchword "Strike !"

Strike !

Cries the telegraph clerk,  
And the wheels of the world are stopped at will,  
And trade is upset by a single word,  
The city life for a while stands still ;  
So ere the order to "Strike !" be heard,

Hark !

And right the wrongs of the telegraph clerk,  
—*London Society June 15.*

### Our National Portrait Gallery.

#### VI.

JOHN LENHART, OF NEW YORK.

Mr. John Lenhart, the subject of our sketch to-day, is probably one of the best-known operators in America.

Mr. Lenhart was born at Akron, Summit County, Ohio, and at the age of twelve years—when the telegraph, too, was in its infancy—he commenced work as a messenger boy in the

"O'Rielly" office at Akron. He soon became an expert operator. The proverbial adventurous spirit of a telegrapher seems to have been more fully developed in John than in most other men, and consequently he has probably done more traveling, by rail, boat, wagon and afoot than

honesty and manly character. Affable in manner, chivalrous as the traditional knight-errant, vigorous in intellect, blonde in complexion, weighing a solid 190 pounds and standing 5 feet 9¾ inches in height, it may readily be inferred that John's wide popularity is not wholly confined to



JOHN LENHART.

any other operator in the business. He has recently removed from Boston to New York, but his name is familiar in every telegraph office, and seems to be inseparably connected with all the stirring traditions of our craft. When the folk-lore of the telegraph comes to be written, the adventures of John Lenhart will not be the least interesting part of it. He has lived in New York, Boston, Chicago, Pittsburgh, Denver, Baltimore, Nashville, Mobile and scores of intermediate points, and is everywhere held in fond remembrance for his genuine, unstudied wit, rugged

his own sex. His literary efforts have been placed before the profession for many years, and are among the most amusing and popular of our peculiar literature. He writes with the easy grace of a cultured man of the world—killing off a rival with an epigram—always in the right; and, occasionally, with knightly courtesy, tossing off a neat verse or two to some Maid of the American Athens.

During the war Mr. Lenhart was chief operator of the Louisville & Nashville Railroad, and also clerk to the President, Hon. James Guthrie.



During the last ten years of his stay in New York he was with the Gold and Stock Telegraph Company, in the Stock Exchange. Here he became personally acquainted with every prominent Wall street man; has tried his luck on "the street," and has come out some thousands ahead; but, as he says himself, with a deep-drawn sigh, "it generally went as it came."

Although John has been one of the best manipulators which the telegraph ever produced, he is now growing a little "stiff" as a receiver, and the proverbial "gilt-edge" is wearing from his "copy." As a sender, however, he holds his own, while his genial good nature is perennial. Having been always regular in his habits, he has never been sick a day in his life; and now, sturdy as an oak, he is always to be relied upon, and always on hand when wanted.

#### The Magneto Telephone—What It is and How It is Made, with Practical Hints Regarding Its Habits.

If a current of electricity flowing in a circuit be allowed to flow steadily without interruption or reversal, it may be called "a steady current," and may be employed to maintain a uniform degree of magnetism in an electro magnet, to produce a light and for many purposes too numerous even for casual mention.

If a current flowing in a circuit be rapidly interrupted, as, for example, that of a primary circuit of a shocking machine, a Ruhmkorff induction coil or the circuit in which an ordinary vibrating bell may be working, the resulting current or currents will be intermittent, and if the vibrations are sufficiently rapid a musical tone will be produced. Such currents are known as intermittent currents.

If in a continuous circuit the strength of current flowing be suddenly increased or diminished, but without breaking the circuit, another system of electrical pulsation is produced. This also may be made to produce musical or other sounds; but still speech can not be transmitted. Such currents are called "pulsatory currents."

If, finally, in a continuously closed circuit, an electric current be flowing, and its strength be alternately *gradually* and yet very rapidly increased and diminished, so that the impulses of current may be graphically represented by a regular curve of wave-like form, we have still another system of current, which is now universally known as "the undulatory current." It is always represented as a line alternately undulating above and below a horizontal line.

It is the undulatory current which renders the transmission and reproduction of vocal sounds possible, because by its employment the pitch, the rhythm and the amplitude of tones can be reproduced at a distance.

The telephone is the instrument by which the undulatory current is utilized and made apparent, and the name simply means an apparatus by which sound is conveyed to or reproduced at a distance.

The currents generated in the telephone are produced on the well-established principle that when a coil of insulated wire is fixed upon or surrounds a soft iron core of a permanent magnet, or upon the end of a magnetic bar, any alteration in the distance of an armature placed in front of the core, alters its magnetism and produces a current in the coil. In the case of a magneto telephone, the armature is represented by the diaphragm.

Sound, it is well known, is the sensation produced in the ear when it is affected by undula-

tions of the atmosphere, and these undulations of the air, producing the sensation of sound, are themselves usually excited by the vibrations of the sounding body which set the air in motion producing waves which spread around in every direction.

When the diaphragm of a magneto telephone is vibrated, the number of its vibrations per second governs the pitch of the sound produced; the amplitude of the vibration determines the loudness of the sounds produced, and the direction of the electrical currents is determined by the direction in which the diaphragm happens to be moving and exercises an effect on the permanent magnet at the distant end of the line.

The telephone, then, at the transmitting end of the line acts the part of an instrument to transform sound into electricity, which it does in the following manner: The sounds uttered by the human voice strike against the diaphragm and cause it to vibrate; its vibrations in front of the permanent magnet causes magneto-electric currents to be induced in the coil which surrounds the pole of the magnet, and these currents, of course, traverse the line to which the coil is connected, and act upon the receiving telephone at the distant point.

The receiving telephone, in its turn, acts the part of an instrument to re-transform the electricity into sound once more, and thus reproduce the tones against the diaphragm of the sending station; for as the currents set up by the sending telephone, after passing along the line wire, enter the coil of the receiver, the magnetism of the magnet core is, by the action of those currents in the coil surrounding it, so modified as to cause it to set up vibrations in the diaphragm which exactly correspond in form to the vibrations of the transmitting diaphragm, and thus the original sounds are reproduced, with the exception that, the amplitude of vibration being considerable less, the sound is much fainter.

The telephone, as at present constructed, is a small and conveniently-shaped instrument, and is almost universally used as receiver alone, as it has been found that when used as a sending instrument its tones were too feeble for an extended practical use. Hence it has been largely superseded in this direction by one form or another of the well-known battery telephones, which will probably be the subject of a subsequent article.

The telephone is a bar magnet of hard steel, inclosed in a case of hard rubber. It is provided with a vibrating diaphragm, which is clamped between the telephone case and the cap forming the mouth-piece; the latter also being made of hard rubber. On the diaphragm end of the magnet is placed a coil of wire which, by means of two screw posts on the end of the telephone, is connected in the line circuit.

Such, in general terms, are the essential features of the telephone. In order, however, to a complete understanding of its working, and that its peculiarities may be thoroughly comprehended, we will enter more into detail; for the telephone resembles the fairer part of the human race in this, that it must be understood to be appreciated.

The magnet is made of four distinct pieces of steel, each one separately magnetized, laid together in pairs, with similar poles together, thus forming a compound magnet and one less likely to lose its magnetism. At each end between the two pairs is placed a soft iron core, or pole piece; the shorter one is placed at the end intended for the handle, the longer at the

diaphragm end. The coil, which is of very fine silk-covered copper wire, is placed on the longer core, and ordinarily measures about 75 ohms. Its wires are continued down beside the magnet, and soldered to two binding screws at the end. The diaphragm is simply a thin round iron plate, such as is used by photographers to prepare ferro-types on. The hard rubber case is made by the India Rubber Comb Company, of New York. In it the compound magnet and coil is placed, a screw is inserted in the lower end, to hold it, and the case is then filled up with a preparation of paraffine and turpentine, which serves to give solidity to the instrument and to keep the magnet from shaking about. Reaching a shade above the level of the coil core, the case bells out and forms a seat for the diaphragm, which must be as close as possible to the core, without actually touching it. It is clamped in place by the cap forming the mouth-piece, which is screwed on. The instrument is now complete.

The telephone has a few peculiarities which are, perhaps, not so well understood as they might be. Some of these will now receive attention.

To speak properly through a magneto telephone, the upper lip should just touch the mouth-piece and the tone of voice must be moderate. The resulting sounds will be much clearer in articulation and much louder than if the speaker were to get inside of the mouth-piece (which, speaking hyperbolically, many persons do) and then shout loud enough to wake his slumbering ancestors.

A case in point, which occurred at an exchange office where there had been no demand for transmitting telephones, the magneto telephones having given complete satisfaction, is treasured up in our memory. Arriving at the place in question, as we approached the Central office we heard frantic yells of "hello" uttered apparently with the full lung power of some blatant demoniac. This continued until we entered the office, when the cause of the uproar was discerned in the person of a boy of 13 who coolly informed us that he always halloed like that; and then if the subscribers didn't hear him through the telephone, they would through the air.

A mistake frequently made is to keep the telephone mouth-piece cap much too tightly screwed on. The general impression appears to be that the tighter the cap is screwed on, the better it will work and the louder will be the sounds reproduced. This is not confined to employes of the telephone companies. Almost every gentleman, lady, ploughboy or tramp who handles a telephone may be seen to carelessly unscrew the telephone cap and then screw it up again, apparently using all his or her strength in the latter operation. The fact is that when the cap is screwed on with more than a moderate degree of tightness, the movement of the diaphragm is fettered and the loudness and distinctness of the reproduced conversation correspondingly decreased. It is well, therefore, after screwing on the cap, if it be ever taken off, which is, however, generally unnecessary, to give it a slight turn back. The difference in the result is sometimes surprising.

Occasionally a telephone will decrease in power after being used for some time. This may be due to one of the following causes:

First, it is possible, from some reason or other, such as a poor quality of steel which may accidentally have crept in, or from lightning storms, or from powerful electrical currents received by



crosses from a foreign wire, that the magnetic strength of the telephone magnet may be greatly diminished, or even lost altogether.

To ascertain if such be the trouble, unscrew the cap, gently slide the diaphragm off, and try if the magnet be strong enough to support the diaphragm edgewise. That is, hold the telephone with one hand, coil downward, and present the edge of the diaphragm to the magnet core. If it will hold it, it should speak properly, and that is not the trouble. If it won't hold at all, don't try to tinker with it, but send it back to the supply department and have it replaced by a new one.

Secondly, if the telephone has been in a warm place, or if the weather has been unusually hot, the compound used to fill up between the case and the magnet may get soft and occasionally become so fluid as to run down and get between the core of the magnet and the diaphragm. When it again solidifies, the effect will be that the diaphragm will stick to the core and be thus impeded in its vibrations, or prevented altogether from vibrating.

The remedy in this case is obvious. Scrape the composition carefully from the core and from the diaphragm; rub both with a rag moistened with spirits of turpentine, and again screw on the cap, occasionally taking a look at it, to prevent a recurrence of the trouble.

Should it ever happen that telephones are used on a battery circuit, see that the zinc pole of the battery goes to that screw-post of the telephone which is marked Z. In other words, if the copper pole of the battery at the office is to line, the wire leading from the office must be connected to that screw-post which is *not* marked Z. If the zinc pole is to line, the wire from the office must be connected to the post which is marked Z. Then if the battery has any effect on the telephone, it will be to strengthen its magnetism, instead of to weaken it, as would be the case under the opposite conditions.

It is scarcely possible that with fair play the circuit wires in the telephone should ever be broken, yet they occasionally are. If no sound at all issue from the telephone, and a broken circuit wire be suspected as the cause, disconnect the telephone and place it in a battery circuit which is open. If the wire be anywhere broken, no sound will be heard on closing the circuit. If, on the contrary, the wires are perfect, a click will be heard at the moment of closing the circuit.

The beauty of the magneto telephone is its simplicity. Simple in construction and simple in operation, where is the marvel that it has become what it has—the household representative of electricity? It can be modified indefinitely and has been, there being over a hundred patents issued on such modifications. But so long as there is the magnet, the coil and the diaphragm, there is the telephone—the magneto telephone—and nothing more is essential to articulate speech.

#### The Consolidation.

JUDGE TRUAX SUSTAINS THE TELEGRAPH PEOPLE  
—WILLIAMS AND HATCH DEFEATED.

Judge Charles H. Truax, in the Special Term of the Supreme Court, on the 20th ult., handed down a decision dismissing the complaint in the suit of William S. Williams against the Western Union Telegraph Company and others, brought to restrain the proposed increase of \$15,000,000 of capital stock of the Western Union Company, with which readers of THE OPERATOR have already been made familiar.

Judge Truax finds that Jay Gould, Russell Sage and Thomas T. Eckert did not enter into an unlawful combination or agreement with others for the purpose of uniting large amounts of capital, and depressing the stocks of the several telegraph companies, in order that they might get control of them.

He holds that the property of the American Union was worth \$15,000,000, and that of the A. & P. \$8,400,000. He reviews the conflicting testimony on this point, and quotes the decision of Chief Justice Bigelow, which says that the valuation of such property must include, besides the value of its corporate property, the profits of its operation, the prospects of its future success, the nature and extent of its corporate rights and privileges, and the skill and ability with which it is managed. He finds that the scrip dividend of \$15,526,590 represents surplus earnings of the Western Union since July 1866. He holds that the Western Union was authorized to issue stock for these surplus earnings. After quoting the statute upon which the plaintiff relied to show that this issue of scrip dividend was illegal, Judge Truax says:

If the defendant, the Western Union Telegraph Company, has divided any portion of its capital stock among its stockholders, it comes within this statute, and the plaintiff is entitled to maintain the injunction already issued. What is the meaning of the words "capital stock," in the statute cited? The capital stock is not only the money put into the corporate fund; it is also the property put into that fund. It is to be distinguished from the certificates issued by the corporation, usually called stock certificates, which are simply the written evidence of the holder's right to participate in the surplus profits.

After concluding that the scrip is not the stock, Judge Truax says:

I am of the opinion that the statute means that no corporation shall divide among its shareholders any portion of "the property and franchises of the company," and that the action of the defendant—The Western Union Telegraph Company—in issuing the said \$15,526,590 of certificates of stock, of which action the plaintiff complains, is not prohibited by the statute above quoted.

Judge Truax holds that the increase of the capital stock of the Western Union to \$80,000,000 was authorized, and that the company had a right to waive payment in money and accept payment in money's worth.

The decision, which is very long, finally says that the defendants are entitled to judgment, dismissing the complaint on its merits, with costs.

On the following day, June 21, Judge Truax rendered a decision in the case of Rufus Hatch against the Western Union, the action being similar to that brought against the same company by Mr. Williams.

Judge Truax finds that Mr. Hatch bought 100 shares of Western Union stock the day before the agreement of consolidation, with knowledge that negotiations for consolidation were pending, and 400 shares four days after the agreement had been made, with full knowledge of the fact. He finds that the \$15,526,590 of stock issued to the shareholders of the Western Union Company "is not what is called watered stock;" that the agreement of Jan. 19 was made in order to perfect and extend the connections of telegraph companies in this State; that the laws of the States of Ohio and Pennsylvania have no authority over the Western Union Company, and will not prevent the execution of the agreement, and that the law of Congress set up by the plaintiff cannot restrain the Western Union Company from carrying out its plans of consolidation. Judge Truax finds as matter of law that Mr. Hatch had not such standing in a court of equity as would entitle him to bring an action to restrain the Western Union Company from performing the agreement of consolidation which it has entered into.

This will, by no means, though, be the end of this costly litigation, there being too many hungry lawyers tolerated to allow any case to rest where millionaires and rich corporations can be roped in. The list of lawyers in these cases was suggestively long.

Mr. Williams' counsel have already signified

their intention to take an appeal to the Superior Court, General Term, and if that fails, to the Court of Appeals. It is already claimed that Judge Truax has given an interpretation of the law in direct opposition in essential respects to that previously given by Chief Justice Sedgwick in granting an injunction pending the litigation. It is also opposed to that given by Judge Speir in the suit brought by Mr. Rufus Hatch.

This view of the matter is unfair, even if not totally wrong.

The *opinions*—there were no "decisions"—rendered by Chief Justice Sedgwick and Judge Speir were for provisional and temporary purposes, only both of them merely hearing the affidavits on both sides, and there was no cross-examination. These judicial opinions were consequently rendered upon partial testimony, and were merely intended to hold the company in check until the matter came up for a fuller hearing. We now have the *decision*, which is final until reviewed next October by General Term on appeal. Whether or not the case will ever get there is also doubtful. One side claims that Judge Truax's decision can only be reviewed by Judges Sedgwick, Van Vorst, Speir and Freedman, of his own court. Of these, Judges Sedgwick and Speir are prohibited by the code from hearing any appeal, because they previously heard a portion of the Western Union cases, so that Judges Van Vorst and Freedman only could sit to hear any appeal. Inasmuch as three judges must constitute a court to hear cases at a General Term, the cases of Williams and Hatch, if appealed, could not be heard until Judge Sanford, the only remaining judge, recovers his health, or until a new judge is appointed in his stead to make up a full General Term.

The other side claims that Judges Sedgwick and Speir are not disqualified; that, although Judge Sedgwick has already rendered an opinion on the Williams case, and Judge Speir one on the Hatch case, there is nothing to prevent Judge Sedgwick from hearing an appeal on the Hatch case, while Judge Speir may hear the appeal in the Williams case. So the Little Buttercup business can be prolonged indefinitely. Meanwhile, the consolidation can go on untrammelled.

On Saturday last counsel in both the Williams and Hatch cases filed notices of appeal from Judge Truax's decision.

#### The Telegraph in the Arctic Regions.

Before the California Academy of Sciences, on the 6th ult., Mr. James Gamble, General Superintendent of the Western Union Telegraph Company, presented a valuable paper on "Arctic facilities for running telegraph wires over frozen surfaces," thus retaining constant communication with parties when detached from the vessel exploring northward by dog-teams. He recommended the use of No. 20 gauge steel wire, weighing about 20 pounds to the mile, to be coiled on reels and carried on sledges, paying out as the party advances. The ice furnishes perfect insulation, and telephones or telegraphic instruments could easily be attached and used, enabling the parties out to report constantly, or to call at any time for aid. With this connection, rendering intelligent relief more certain, parties could venture much further away from their base of supplies.

Referring to Mr. George Kennan, and the objections raised by him, Mr. Gamble says: Among those who have been good enough to notice my suggestion and manifest an interest in it, is Mr. George Kennan, of Washington, a gentleman familiar both with the telegraph and the Arctic regions, having been connected with the Collins Overland Telegraph Company. He assisted in the building of that line during the period of construction, and afterward made a journey through Siberia.

Mr. Kennan is a most intelligent gentleman, but I cannot help thinking that his observations on this subject are mainly the result of his imagination, and not of practical experience in regard to the utility or inutility of a telegraph line in Arctic explorations.

At 20 lbs. to the mile, 100 miles of wire would only weigh 2,000 lbs. It could be wound on reels in any size easy to handle. The cost of steel wire of that gauge is about 20 cents a pound, so that the total expense, including cost



of reels, winding, etc., would not exceed \$1,000. Even in the event of a prejudice existing against steel wire copper wire could be used. In suggesting steel, I did so simply because of its greater strength and cheapness. But did such a danger exist as supposed by Mr. Kennan, of the snapping off of the wire at the turn of the reel under a low temperature, how was it then that the wire for those portions of the telegraph line built across Northern Siberia toward Behring Strait, to connect there by means of a cable with the Collins overland line on this side, was uncoiled? Several portions of that Siberian line were built and the wire strung during the winter, with the thermometer ranging down to 50° below zero, Fahr. The line running along the head waters of the Anadyr River and along the Okhotsk Sea was also built, the wire uncoiled and strung during the winter months. It was the only time of the year, in fact, it could most successfully be done, it being difficult to haul the loads of wire over that part of the country, owing to the wet and swampiness of the land during the other periods of the year.

Mr. Gamble claimed later knowledge of these affairs than that possessed by Mr. Kennan, and he urged Lieutenant Berry, of the Jeannette Relief Expedition, to take a small quantity of wire and some instruments and telephones, and to make the trial, for at least a short distance. The paper was full of interesting suggestions, and gave much valuable telegraphic experience while constructing the overland telegraph lines across our continent, especially the Sierra Nevada Mountains, where such cold weather and heavy snow are met with every winter. He said that obstacles should prove stepping-stones to progress, and urged that some practical test should be made as early as practicable, that every possible facility might be afforded to our brave Arctic explorers in the future. These sentiments were freely applauded.

In his rejoinder Mr. Kennan twits Mr. Gamble with being unacquainted with the conditions of Arctic life; points to the well-known scarcity of trained dogs and reindeer in hyperborean regions, and argues generally against the utility of such a scheme, even if it were feasible.

#### A Canadian Opinion of the Western Union.

The consolidated Western Union Company does not seem disposed to breathe freely until it shall have absorbed all the remaining independent telegraph companies it can. To-day the Northwestern lines have been added to the general system, negotiations are also in progress for the absorption of a company in Manitoba, connecting with the Northwestern, called the Great Northwestern, as well as with the Montreal Telegraph Company of Canada. The Western Union, it will be remembered, already controls the other Canadian Company, the Dominion. Considerable opposition is therefore manifested by patriotic Canadians to the amalgamation of their only remaining company.

The *Toronto Globe* of June 11th, referring to the matter, says:

The public can only have one interest in this subject; that is to prevent the consummation of a monopoly of the telegraphs, and to take every means to break up the monopoly if it should be constituted in defiance of public opinion. The shareholders of the Canadian company have, most of them, the same interest as the public in securing cheap telegraphy, but they have also another interest. Their property is now a remarkably good one. Dividends of eight per cent. with bright prospects of an increase, are by no means to be sneezed at in these days. Let them beware lest in grasping after an increase they lose that which they have.

The Western Union, with which the amalgamation is proposed, is a very imposing monopoly. Apparently the riches and powers of this corporation know no bounds. But in reality the Western Union resembles nothing so much as a gas-bag inflated to the point of bursting. Four dollars out of every five upon which it pays dividends represent not invested capital, but "water."

The Western Union is one of the most favored

targets of the stock jobbers. Several times over new telegraph companies have been set going with the sole object that the Western Union might be badgered into purchasing them at an exorbitant price. Jay Gould has himself played this trick more than once. His last scheme, the American Union, has been bought up by the Western Union within the past few weeks, Mr. Gould becoming a very large shareholder in Western Union, and thus apparently furnishing a guarantee that there will be no further hostile acts on his part. But, then, nobody knows from one day to another whether Jay Gould has "unloaded" his Western Union stock or not. To-day he may be a "bull," and to-morrow the most ferocious of "bears." There is nothing whatever to prevent him or any other capitalist or capitalists from starting a new telegraph company, with small capital, which can take away nine-tenths of all the business of the Western Union that yields any profit. Such a company could be started on one fortieth part of the capital upon which the Western Union is compelled to yield a dividend. In short, the situation of the Western Union is such that the temptation to prey upon it is irresistible. The very fact that its capital is inflated to an unconscionable extent lays it at the mercy of "wreckers." Then, the profits to be reaped by a competing company are so huge as to make the business of starting companies purposely to be bought up by the Western Union one of the most remunerative jobs on record, at least, Jay Gould has found it so.

The only argument of any real weight that is advanced in favor of the amalgamation is that the monopoly of the Atlantic cables is so close that under present arrangements the Montreal company does not get fair treatment. This is by no means an overwhelming reason why the entire telegraph system of this country should be handed over to Wall-street stockjobbers. The cable monopoly will not endure for ever, and it is high time that at least one of the several Atlantic cables landed on our shores was controlled by Canadian capitalists. Atlantic telegraphy is a hugely profitable business. There is plenty of unemployed capital in the Dominion. Why not have a Canadian cable and cease having our telegraphic messages sent through our own territory into the United States and thence back again?

#### A New Theory of Induction.

WERNER.

Induction, and the theory of induced currents generally, is probably one of the least known mysteries of electrical science, while, at the same time, as I hope to show, it is the most prolific in evil results. It has certainly not been heretofore demonstrated that an operator, by working continually on one circuit, and with the same person, may absorb, by induction, the character and bearing of his *vis-à-vis*, the stronger character, of course, prevailing. It was only a few weeks ago that Messrs. de Fevre and Cone, two eminent operators—the former being famed for the evenness of his temper—agreed to fight a duel, all owing to the baneful influence of some vicious telegraphic hob goblin, and, while the mischief may have been made by an unseen electrical sprite, there can be no doubt but that the mild and girl-like de Fevre acquired his pugnacity entirely by induction from the man whom he had never seen, but with whom he worked—the roaring Cone. This case is clearly confirmatory of my theory, and it is to be hoped that our scientists will now concentrate the various resources of their minds on this interesting subject.

It has long since been remarked by observant students of the theory of induction that while our operators working from one American station to another underwent no appreciable change—owing, doubtless, to a similarity of their national characteristics—those who have worked for any considerable length of time with our "kin beyond the sea," have acquired, doubtless by induction, habits and language startlingly foreign to their inborn natures. Thus a well-known native Nova Scotian of Scotch descent, cold and Calvinistic in temperament, who has worked the Atlantic cable to Valentia, Ireland,

for the past three years—although he has never been in that historic country—now swears "Begorra," wears a frieze coat and a high straight-up-and-down felt hat without a rim, smokes a black clay pipe with an inch stem, and refuses to pay his rent. But still later—showing that as the use of the telegraph becomes more constant the influences of induction are becoming more marked, even at home—an astounding change has been noticed in the character of the seraphic Mr. Smiler, who is studying for the ministry, and who was certainly the mildest and least courageous man in the Chicago office. After working for a year and a half on the same wire with Hank Smashem, a notoriously stubborn and belligerent operator in Cheyenne, Mr. Smiler had absorbed, by induction, so much of Mr. Smashem's nature that, in spite of the inexorable stringency of the rules in Chicago, he actually strutted down the aisle with his hat tipped over his left eye, loudly whistling "She's a darling, she's a daisy," and when mildly remonstrated with, upset the Manager's bottle of red ink, and threw the Traffic Chief's overcoat out of the window. When this same Mr. Smiler arrived home he openly sang, "I'm leaving thee in sorrow, Annie," although his wife's name was Jane, and she was of an extremely jealous disposition.

In Holland, an operator who could speak no language but Dutch, pure and simple, has been known, after working the cable to England for fifteen minutes, to arise from the operating table in Zwinjdrecht and exclaim in vigorous (induced, of course) Anglo-Saxon, "Twig the bloomin' relay," and "I've 'arf a mind to resign, you know."

There can be no doubt but that all these phenomena arise from induced currents between diverse characters. While innumerable other cases of the sudden display of abnormal characteristics in telegraphers are constantly occurring, it has also been shown that a wire manned by common operators works much faster when Eitemiller simply stands near it. But my duty is at present to state facts and not to account for them, and to point out to our electro-physiologists a new subject for research and one that, even if not as tenable or useful to true science, will, at least, afford more cheerful reading to the rank and file of our profession than the unbroken and dreary array of logarithms, cube roots and algebraical signs which now spread themselves all over our electrical journals.

#### The English Operators' Grievances.

Since our last issue the operators in the employ of the government in England have taken some vigorous measures to bring their dispute to a crisis.

On the 12th of June, at a meeting of 1,200 operators in London, it was resolved to call a national conference of telegraphists to be held in Liverpool in three weeks, and pledging the meeting to abide by the decision of that conference. Another resolution was unanimously passed, agreeing to strike if that course of action should be decided upon. The meeting resolved to take immediate steps to bring about a total cessation of overtime work.

Three days afterward, June 15, the London operators resolved to cease making overtime on the 27th of June, as a preliminary step to obtain a reduction of their hours of service. The Leeds operators approved the action of the London committee, and resolved upon a given date to discontinue all overtime working.

This seemed to act as a stimulating prod on the "Controller of Telegraphs," who issued a circular to the operators pointing out that it is impossible to satisfactorily dispose of the fluctuating business of a telegraph office without having recourse to overtime, which is, therefore, compulsory; but that any reasonable application for exemption from overtime will be duly considered. The operators, as might be expected, respectfully declined to take such an overdose of official blarney, and quoted from the reply of Right Hon. William Monsell, who was Postmaster General in 1871, to a question in the House



of Commons, in which Mr. Monsell stated that overtime was not compulsory. Upon this official precedent the men rested their case, considering that it settled the question. To strengthen their position, in view of the resolution to cease working overtime on the 27th of June, the operators met again and resolved that if any of them were suspended on account of the agitation, the whole staff would at once go out on strike and remain out until their colleagues are reinstated.

This action seemed to have the true ring, and it brought forth a proposition from the Postmaster General which, however, caused only disappointment. The leaders of the agitation regarded Postmaster General Fawcett's new scheme as vague and indefinite, and they could see no real benefit in it. A meeting of the Executive Committee of the telegraphers was, however, called to consider it. This body adopted a resolution that a fresh petition be drawn up, setting forth the points wherein Postmaster General Fawcett's scheme will not relieve them; also wherein its application is exceptionally favorable, and that the various points contained in their former petition be again put forward for Mr. Fawcett's consideration. The meeting also rescinded the resolution to cease working overtime on the 27th of June, pending a further reply from the officials.

Since then advices by cable say that the feeling of dissatisfaction among the telegraphers has caused many to seek employment in the offices of foreign cable companies, the pay of the latter being double that of government pay. Many have signified their intention to resign.

#### Extending the Telegraph.

Articles of incorporation of the Postal Telegraph Company have been filed in the office of the Secretary of State, at Albany. The company are to have wires in all parts of the United States, and are permitted to form telegraphic communication with foreign countries. The capital will be \$3,000,000, with power to increase the same to \$21,000,000. The stockholders are Henry Cummins, Henry E. F. Fanshaw and Samuel C. Gallaher. The company came into existence June 21, 1881, and is to continue until 1981.

The certificate of incorporation of a telegraph company, formed for the purpose of constructing instruments and establishing lines for working House's improved system, was filed in the County Clerk's office, in Binghamton, N. Y., on the 14th ult. The officers are as follows: Cyrus Strong, President; Royal E. House, Vice-President; Cyrus Strong, Jr., Secretary; Tracy R. Morgan, Treasurer. Arrangements are being made, and it is expected will soon be perfected, for the immediate construction of a line from New York to Philadelphia. This system is entirely novel, and is the result of nearly 20 years' investigation and study by Prof. R. E. House, inventor of the printing telegraph. The principle features are automatic and extremely rapid transmission. It is claimed by the inventor, and fully believed by those who have seen the machine in operation, that the average cost of transmission by this system will be much reduced, at least one-half, thereby making cheap telegraphy possible. During the coming year it is intended that all the principal cities shall be connected.

Mr. William B. Gill, late Superintendent of the Western Union 6th District, and Mr. D. P. Emminger have entered into a contract to build a new telegraph line from Philadelphia to Pittsburgh, Pa.

Besides these, we have also the Mutual Union Company, with a capital of \$5,000,000, the International with a capital of \$10,000,000, and another to be called the Graphic Telegraph Company will presently make its appearance. Of this latter company Mr. Keene is the originator. Its capital stock will be \$5,000,000.

The cable steamship Faraday, Captain Maypee, has completed the shipment of the remaining portion of the new American cable, and has gone to sea to pay it out.

A dispatch dated London, June 28, says that

the Faraday picked up the buoyed end of the new cable off Land's End and spliced it, and then proceeded for Newfoundland, laying the cable.

#### Alleged Maltreatment of the "Great Mogul."

The *Railway Age* gives the following incident of Jay Gould's recent trip to the West, but does not vouch for its truth:

Mr. Gould went out on the rear platform of the train, and stood there enjoying the scenery. A sudden lurch of the car caused him to clutch instinctively at the hand rail. A lynx-eyed brakeman observed the suspicious movement. So he opened out on Mr. Gould:

"There now, you can just go inside the coach. We don't purpose to have any dead men on our hands. Cows are bad enough."

Mr. Gould regarded the brakeman attentively.

"You go inside the coach. We can't slow up all the way on your account."

"I am merely enjoying the—"

"No back talk now. Rules is rules. You toddle for the coach. D'y'e hear?"

The brakeman advanced threateningly on Mr. Gould, who stepped down on the first step, and clung to the safety rail. The brawny brakeman grabbed his coat collar, and lifted him back on to the platform.

"Do you (shake) propose to (shake) go inside or (shake, shake) not?"

"If I was but a conductor—" gasped Gould.

"But yer ain't a conductor, nor a brakeman, nor an engineer, nor a fireman, nor a porter, nor not even a peanut. Yer nothing but a passenger, and yer (shake) place (shake) is inside (shake, shake, shake) the coach."

He shook Mr. Gould's hat over his eyes, and then thrust him into the car, after which he seated himself on the brake top, and allowed his indignation to be lulled to sleep by the rumbling of the train.

#### The New Mexican Cable.

The International Ocean Telegraph Company, through the contract recently made by General U. S. Grant, as its representative, with the Mexican Government, receives the authority to lay a sub-marine cable from the United States by way of Cuba to any point on the Mexican coast, except those places covered by the contract of the Mexican Cable Company. The new company also is authorized to build land lines from the coast to the Pacific, and from any point on its lines to the city of Mexico. It agrees not to charge more than 25 cents a word between Cuba and the Mexican coast, and not more than 5 cents a word over its land lines within the republic, without regard to distance, for messages destined for foreign countries. Government messages are to be sent to and from the capital at a reduction of 25 per cent. from tariff rates. Construction material may be imported free from duty and taxes, and the capital stock of the company is to be free from tax for forty years. The Mexican Government has granted the company liberal concessions in regard to using government land and appropriating those belonging to private persons. Arrangements have been completed for laying the cable between Cuba and the Mexican coast without delay, and work on the land lines will be begun soon.

It was stated in London recently that the telephone was established in America in 1878, and in 1879 it was established in England. The exchange systems in America at the present day numbered 132,692, and in England there were only about 15,000. The output of telephones in America for the year ending February last was 71,819. The reason that the system had not progressed so rapidly in England as in America was on account of the difference which had arisen between the post-office and the telephone company.

#### TELEPHONE DEPARTMENT.

In the Russian language "hello" is rendered "Tzikanfikrajanjanski," hence the unpopularity of the telephone in Russia.

Mr. E. H. Cook proposes, in the *Philosophical Magazine*, the term "sonorescence" as suitable for the phenomena connected with the telephone and the conversion of intermittent radiations into sound.

The telephones erected in connection with several of the fire stations of this city have given such satisfaction that it has been determined to extend the system to many of the more distantly situated stations.

The telephone is being introduced by the New Zealand Government into places where the telegraph does not exist. Between Collingwood and Motucka, a distance of 50 miles, a line has been opened, and is said to work admirably.

M. Duchateau, manager of a French telephone company, has set out for Brussels to represent the French promoters of a telephone company with a capital of \$2,000,000, to be started there under Belgian, English, American and French auspices.

"Hello, Uncle Mose, hello!" cried Jim Webster, as he hurried down the street, trying to overtake the old man. "Be keerful, Jeames, be keerful how you ondress yo'self to me; I ain't no telephone," replied the highly indignant deacon.

Early in 1879 Mr. D. Connolly, a lawyer, and a Mr. McTighe, an electrician, both of Philadelphia, patented an invention which they claim will give each telephone direct connection with any other telephone of the same company without the delay and trouble of communication with an operator at a central office.

A fine little telephone exchange has just been organized at Franklin, Pa., by Mr. James P. Keene, Manager W. U. Telegraph office. Forty instruments are already in circuit, with prospects for seventy-five or more in the near future. Subscribers wonder how they ever got along without the telephone.

Our Baltimore correspondent says: "T. J. McTighe, of Pittsburgh, a graduate of Mt. St. Mary's College, Emmitsburg, has invented an improvement in connection with the telephone, which, if successful, will revolutionize the present telephone exchange system. The improvement is for calling and speaking directly to a person without asking the assistance of the central office. Mr. McTighe is in this city looking after his interests."

A telegram from Boston says that the United States Circuit Court, on June 27, Judge Lowell, rendered a decree for the complainants in the suit of the American Bell Telephone Company, et al vs. Albert Spencer et al. This was a bill in equity alleging infringement of two patents granted to Alexander Graham Bell. The defendants admitted that they had infringed some valid claims of the second patent, but the plaintiffs have given them no evidence of such infringement. They rely entirely upon the fourth claim of the first patent, which is much more comprehensive in its scope. This claim was that the defendants are using a method and apparatus for transmitting vocal sounds which resemble those of the plaintiff in producing electrical undulations, copied from the vibrations of a diaphragm, and sending them along a wire to a similar receiver at the other end.

The court decides that the specific method of producing the electrical undulations is different. It is made on the principle of the microphone, which has been very much improved since the date of the first Bell patent. The judge says: "If the Bell patents were for a mere arrangement or combination of old devices to produce a somewhat better result in a known art, then, no doubt, a person who substituted a new element not known at the date of the patent might escape the charge of infringement. But Bell discovered a new art, that of transmitting speech by electricity, and has a right to hold the broadest claim for it which can be permitted in any case—not to the abstract right of sending sounds by telegraph without any regard to means but to all means and processes which he has both invented and claimed."





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### THE INVIOABILITY OF TELEGRAPH CABLES IN WAR-TIME.

The editor of *L'Electricité*, Mr. W. de Fonvielle, has written an interesting and important letter on this subject to the French Minister of Foreign Affairs. Mr. de Fonvielle calls attention to the great loss and inconvenience which may at any time be imposed upon important commercial centres by the indiscriminate sacrifice of telegraph cables by nations which may undertake to make war upon each other. He concludes by calling upon his government to endeavor to bring about some combined international action which shall "throw over even the bottom of the sea the protection of the principles which the immortal Grotius, the founder of modern international rights, essayed to make reigning law on its surface."

The proposition to exclude all ocean telegraphic systems from warlike operations was made at Geneva last year by Sir Travers Twiss, but it has unfortunately been allowed to languish. It is now to be hoped that the able manner in which the subject is again presented by Mr. de Fonvielle, in view of the deliberations of the forthcoming Congress of Electricians, will result in some definite understanding between civilized nations. If suitable action be taken at that notable gathering, the delegates may be enabled to present the case subsequently to their respective governments.

It is true that the extension of land lines is so widespread that there will, very shortly, be nothing to gain by severing ocean cables—and in this connection it may interest our French contemporary to reflect that between New York and Paris, via the American continent and Asia, there intervenes but 39 miles of water—but, at the same time, our main object should be to minimize the danger of suspension of telegraphic communication by any route, and any scheme looking to the continuance of telegraphic facilities at all times will receive the cordial support of the American Government. It is obviously wrong for two belligerent powers to interfere with the telegraphic facilities—the diplomatic, commercial and social business, and the storm signal service—of neutral powers, and it is just as plainly the duty of all nations to police this important avenue of inter-communication. During the Russo-Turkish war we were prevented for months from sending a message over the Indo-European line, and only this year the submarine cables have been cut by contending parties on the west coast of South America. We care nothing about the differences of Chili and Peru, but we must insist that our merchants shall not be summarily cut off from communica-

tion with their correspondents south, and that the present international code be changed so that neutral powers shall not suffer by the severance of communication with their commercial dependencies. The advent of two exclusively American cables between England and this continent, and several others projected from here to South America and China and Japan, will give us a substantial stake in ocean telegraphy which may well lead our government to foster an international scheme which shall protect those valuable properties against the vandalism of contending war parties.

If the delegates to the Congress at Paris will take action upon this important subject, and if the American representatives lay the matter before Secretary Blaine, America will not be found behind hand in protecting the interests of our submarine cables.

In the decision of Judge Truax, sustaining the consolidation of the telegraph companies—objectionable as we have found that consolidation to be—we can see nothing but sound law and common justice, without misinterpretation or strain. The duty of the Judge begins with the ascertainment of what the law is, and ends with its application and enforcement. It is for him to declare the law, and for us, as good citizens, to "follow and obey."

The centre of interest in both the cases just tried seems to have been in regard to a corporation's voluntary expansion of its volume of stock certificates to cover property acquired from surplus earnings, and the distribution of those certificates among its own stockholders. Now, one of the most sacred rights of a free man is to be enabled to do what he likes with his own property—to loan it, sell it, lease it, or give it away, as he sees fit—and any judicial decision or Granger legislation, restricting that right, will never stand before the Supreme Court. To say that a tradesman shall not shut up shop when he finds that he has done only a losing business—or that he shall not shut up anyhow if he feels like it—and that after closing up he shall not sell the peculiar fixtures which he no longer needs to the only person having need for such fixtures—his rival in the same line of business—is a doctrine worse than despotism, and foreign to the free institutions of America. Property is mainly valuable because it is a realizable asset.

The selfish policy of a monopoly in pooling, combining and squeezing right and left is decidedly objectionable to most people, but it is a part of the great struggle for life. Its natural, effective and sure cure is free competition, and if some of our litigious characters would put into the organization of new companies the money and energy which they now devote to the lawyers they would find more profitable returns.

The earning power of a telegraphic plant is very great; it is as essential as the post-office, and any bona fide company created with a view to the establishment and maintenance of an independent opposition, which shall be honestly and judiciously managed, having for its principal object healthy competition and the public interests, must ultimately succeed; and if any new company now forming neglects at the present time to provide against being swallowed up by the monopoly, they will richly deserve that fate.

SPEAKING at a meeting of the Oriental Telephone Company, in London, on the 3d ultimo, Mr. John Pender said, "The government has

been too slow with the telegraphs during the past ten years, during which period scarcely a new idea has occurred beyond those which have been brought from America." A government monopoly, which never feels the stimulating influence of a wide-awake competitor, must always have a chilling effect upon inventors. As an example of this sleepy way of doing business, we may quote the following paragraph from the latest English papers to hand:

"Upon the recommendation of the Postmaster-General, the Lords Commissioners of Her Majesty's treasury have sanctioned the payment of a gratuity of £20 to Mr. Barnett, a telegraphist at Aldershot, who has devised an ingenious arrangement whereby an ordinary single-needle instrument can be converted into an acoustic instrument at a small cost."

Where an American inventor might have patented his discovery, and offered it to the highest bidder between three or four jealous, competing companies, and thus have obtained a fair price for it, your inventive Britisher has to be content with a hundred dollars, as a "gratuity" from the Lords Commissioners of Her Majesty's Treasury.

THE settlement of the great telegraph suits ought to be particularly gratifying to Mr. Giovanni Purissimo Morisini. It must be embarrassing, to say the least, to be compelled every once in a while to get up and swear, as Giovanni did—in fact, to make a clean breast of it—to solemnly swear that your front name is Giovanni, not George; that you are Treasurer of the American Union; have held that office since the organization of the company; haven't got the books of the company; don't know where they are; never saw them; never made an entry in them; never kept any account at all; never received any money; never signed any checks; never had any duties as treasurer; never received any salary; know nothing about the organization; don't know who appointed you; and, while you are positive it was one of the directors, you have forgotten who were the directors of that concern. That kind of swearing must be in the nature what the boys calls "a roast," and, therefore, as we said before, the happy conclusion of the trial must be extremely gratifying to Mr. Giovanni Purissimo Morisini. Somebody heard old Uncle Rufus Hatch swearing, but whether it was about the result of the trial or the testimony of Giovanni nobody can tell.

THE telegraph profession loses one of its brightest ornaments by the resignation of Mr. Fred N. Bassett, formerly of the New Haven office of the Western Union Telegraph Company; later with the same company in New York, and for the past six years with the New York Associated Press. Mr. Bassett has resigned to accept a position as confidential clerk in the office of the Postmaster General, at Washington, in which city he has been employed by the Associated Press for the past two years. To the many friends of Mr. Bassett the news of his appointment to such an honorable and lucrative post will be welcome intelligence, but among the telegraphers who have worked with him, his pleasant manners and superb ability as an operator will be sorely missed. "The qualities which constitute a gentleman," says Mr. Aldrich, "are indescribable and cannot be defined." Mr. Bassett possesses those qualities, however, in a marked degree, and if his success in life shall be measured by his merits and manly attributes, no man may look for a more hopeful future.



IN reply to a correspondent of this city we would say, on the authority of a prominent Western Union official, that in a few Southern cities the amounts paid for extra service appeared from the pay-rolls to be very large, and the managers were instructed to employ additional operators and discontinue the extra. No reductions, he adds, have been made in operators' salaries anywhere, with the exception of a slight change in the case of a clerk in Charleston and the rearranging of salaries in one or two cases in Philadelphia.

The night men in this city now work half an hour longer than formerly and the ladies, who used to report for duty at 8.30 a. m., must in future be on hand at the same hour as the men—8 o'clock. This addition to their hours of labor has not, as might be expected, been received with much favor by the night men; while one would think that the ladies, who get very much smaller salaries, should not be compelled to work quite as many hours as the men. However friendly one may be disposed to be toward the "new broom," there can be no mistaking the fact that the ultimate best interests of the company will be best served by judicious liberality and consideration toward its employés. There is a wide-spread feeling of discontent East and West, which the company should not increase by encouraging the very questionable "economy" of lengthening the hours of labor, and decreasing, whenever an opportunity presents itself, the salaries paid those upon whom depend the earnings on its \$80,000,000 of capital.

Good operators are already extremely scarce, and every turn of the vise sends more of them to seek in outside business for that remuneration, promotion and consideration which has been denied them from telegraph companies.

THE Ohio man, whose picture we present to-day, represents a race of telegraphers now fast dying out, and of that old stock—the blue blood of the telegraph—there was none more intelligent, cheery and philosophical than John Lenhart. Your operator is still a great traveler, but in John's early day the man was a nonentity who had not sent forty words a minute, earned fabulous sums of money, been "cleaned out" in Wall street, twisted a brake for a while on the railroad, and footed from New York to Omaha. Things have been toned down considerably since then, and many great changes, for better or worse we cannot say, have taken place. But through all those years rugged John has, in his own hopeful way of looking at the world, manfully withstood old Father time's vigorous onslaught, and has come out of the fray without a scar.

THE theory of Professor John Trowbridge that northwest winds along our northern coasts are usually accompanied by a positive charge of the atmosphere, and east winds by a negative charge, and that the coming of these winds can be predicted by observations on the electricity of the air, and the suggestion made by the same gentleman that the universities along the Atlantic coast, from Boston to Baltimore, should co-operate with the U. S. Signal Service in establishing stations to observe the electrical state of the air, are worthy of the most profound consideration. Observations might thus be taken by persons of higher attainments than the enlisted men now employed at the ordinary meteorological stations, and the experiment on this coast would, at least, decide whether or not it would

be advisable to extend the observations to other points.

AFTER a long and earnest struggle, conducted with such eminent courtesy and propriety of manner that its heat has been barely perceptible, it seems at last as though our English professional brethren were on the point of success. In refusing to work overtime the operators quote the ruling of Postmaster General Monsell, in 1871, which declares that overtime is not compulsory. The operators have for months expostulated with dignity and firmness with the present Postmaster General, and now openly threaten to paralyze telegraphic communication by a strike. The liberal government can not afford to precipitate such a public calamity, and the indications are that it will divide with its overworked operators the £355,000 which it pocketed last year as profit on an income of less than £1,500,000.

BILLS of complaint were filed in the United States Circuit Court clerk's office on the 14th ult., in suits by the Western Union Telegraph Company against the American Rapid Telegraph Company and the Mutual Union Telegraph Company and others for alleged infringement of a patent held by the complainant company, being certain new and useful improvements in "Induction Coil Apparatus and in Circuit Breakers," of which Charles Grafton Page was the original and first inventor. The Western Union Company prays for injunctions perpetually restraining the American Rapid Telegraph Company and the Mutual Union Telegraph Company from using any machinery containing said improvements.

IN the pending trials of the assassins of the late Sultan at Constantinople, it is sworn that Abdul Aziz, among other crazy freaks, wished to make his barber Director-General of Telegraphs, but on learning that the holder of such an office ought to have some knowledge of the business, and recognizing the ridiculousness of having the wires strung on barber's poles, he changed his mind and made the barber governor of a province. In this country no barber is qualified for a telegraphic director unless he has worked at least two weeks for the late American Union Company.

A CLASS of twenty-five Chinese students is receiving instruction in telegraphy at Hartford, Conn., and many of the members are apt pupils. This fall the advanced students, to the number of twenty, probably, will be sent to China, where they will be employed in practical work on lines which the Chinese Government contemplates establishing, or in acting as instructors of classes of their countrymen in the telegraphic system. President Doren may learn a lesson from this, by sending American operators abroad to work the American cables.

ARRANGEMENTS were perfected at Dayton, O, June 27, for consolidating all the telephone exchanges of the State by the organization of a general company. George L. Phillips, of Boston, has conducted the negotiations. The new company will have a capital of \$1,000,000, and connection will be established at once between Cincinnati, Cleveland, Toledo, Columbus, Dayton and adjoining towns. The longest circuit will be about 200 miles. This step is regarded as the first leading to the connection at an early date, by telephone, of New York, Chicago and all the principal cities of the Union.

THE approaching completion of the American cable to Europe promises a first-class war of rates between the old and new lines. It seems likely that the tariff will at once drop to the non-paying basis of 12½ cents per word, and if it does some one will be terribly squeezed. But Mr. Jay Gould is in dead earnest, and, although he swore he was "a little lame," it may be confidently asserted that it's a cold day when Jay Gould gets left. Meanwhile, under the cheap rates, which are bound to come, we may look forward to a tremendous rush of cable business.

IT would be a wise thing for our exhibitors at the Paris Electrical Exhibition to have printed, in English, German and French, lucid descriptions of their wares, and to see that the circulars thus printed are placed where they will do the most good. Since the "American" cable company has gone to England to have its cables made, it seems to behoove our native manufacturers to bestir themselves.

IN the London House of Commons on Tuesday, June 28, the First Commissioner of Works and Buildings said that members were not satisfied with the result of the experiments of lighting the House of Commons by means of the electric light, which were made during the late recess, and that further trials have been postponed until the next recess.

TO-DAY the Northwestern Telegraph Company, whose lines extend through Wisconsin, Minnesota and Dakota, will be taken into and made a part of the general system of the Western Union under a ninety-nine year lease, and will form a part of the central division. This is expected to greatly facilitate the transmission of messages.

THE custom of leasing wires is growing rapidly among brokers and merchants. This is drawing many of our best operators from regular telegraph offices and placing them in the counting rooms of prominent business men, where their ambition may find wider scope and better remuneration.

OFFICE hours on the 4th inst., in the Western Union service will be from 8 to 10 o'clock A. M., and from 4 to 6 o'clock P. M., except at repeating stations and principal offices, which will be kept open as usual, but with such reduction of force on duty as circumstances will permit.

ONE month from to-day the Congress of Electricians will assemble at Paris. Our correspondent sails hence on the 9th inst., and THE OPERATOR will have full details of the proceedings, as well as graphic descriptions of the electrical exhibition.

COMMUNICATIONS relative to the convocation of an international Congress for the preservation of the neutrality and inviolability of telegraph cables in war time may be addressed to "L'Electricité, 16 Rue du Croissant, Paris, France."

IF the Western Union would send to the Paris Electrical Exhibition an engrossed list of all the operators who have had their pay cut down since the consolidation, they would have a fine exhibit.

THE idea of electricity as a motive power seems to be enjoying quite a boom.

WESTERN UNION stock is quoted at 135; last issue it was 133.



## Notes and Queries on Electricity and Electro-Magnetism and Their Applications.

"Practical as far as possible;  
Theoretical as far as necessary."

Q. 136. What are leakage conductors, and how are they applied to pole lines?

A. Leakage is a term applied to the escape of electricity from the wires in very small quantities. It is caused by imperfect insulation, which allows portions of the current to separate from its proper conductor and to divide itself between all the other roads to the ground, in proportion to their respective resistances. These other roads are, first, the pole, and second, the other wires, which are often of different lengths. So long as the current escapes to the earth, no great harm is done, as the only effect is to weaken the signals; but when it leaks into another wire it confuses the signals on the second line. The plan for remedying the trouble, first suggested by the English telegraph engineer Highton, in 1852, and subsequently patented by Varley in the United States, is to attach a thick wire to the pole, coiling the earth end in a spiral under the foot of the pole and continuing the wire till it projects above the top of the pole, thus serving also as a lightning conductor. Branch wires of a smaller gauge are then fastened to each earth wire, and extended along the cross arms to each insulator pin, to which they are firmly attached. Any current then leaking from a wire will naturally take the quickest way to the earth down the poles, via the earth wires. This is most effective in preventing interference between wires, when the earth wire is attached to every pole. The earth wires, however, do more harm than good when they do not make a good earth connection. A buried plate soldered to the earth wire makes the best earth. A patent has recently been taken out for improved appliances, which have taken the shape of metallic sleeves or sockets, fitted in the holes of the cross arms in which the insulator pins are inserted, and for a continuous wire running from pole to pole and attached to the earth wire of each pole. The English insulators, being generally fixed on metallic pins, do not need these metallic sockets.

Considerable attention has of late been given to this point, owing to the rapid increase of telephone lines, which, with their extremely sensitive instruments, render electrical disturbances of any character very evident.

Q. 137. Describe the different supports in use for housetop lines, giving proportions of the same.

A. These supports, which are technically called fixtures, are variously constructed, according to the character of the roof and locality where they are erected.

They were, until within the last few years, of very simple construction and comparatively small; but since the introduction of the telephone exchange systems, they have necessarily increased in size, and it is a matter of some mechanical skill to maintain the best proportions for strength and capacity.

Two general classes comprise the whole—Wall and Roof fixtures. These, again, are made single or double, according to the number of wires they are required to support.

A roof fixture is one which is absolutely placed on the actual roof of a building.

A wall fixture is spiked to the side wall of a building or a party wall.

A double roof fixture for telephone work should be made high, so as to clear all foreign wires. The upright posts should be at least fifteen feet high and five inches square, the cross-bars fourteen feet long and four by five inches in thickness, and secured to the uprights by lag screws. The upper cross-bar may be placed one foot from the top of the uprights, and the others eighteen inches apart. If but three are required instead of four, place them two feet apart. The insulators should be at least nine inches from centre to centre.

Two wooden braces are attached, each being connected from one upright just below the

lowest cross arm to the other upright near the foot. They are secured as follows:

One of the braces which cross each other in the centre is secured to the inside of the uprights by three-quarter-inch bolts and nuts, and should be of three by five lumber. The other brace is fastened to one side of the fixture and is secured to each upright and to the other brace, where they cross each other at the centres, by three-quarter-inch lag screws. The front and back braces must be of one-inch round iron, should reach up the fixture to a point immediately below the first cross-bar, and should be fastened at the upper end by five-eighths inch bolts, so that one set of bolts shall pass through both wooden braces. At the lower ends, the front and back braces should be secured to the roof by three-quarter-inch lag screws. All screws entering the roof should be carefully soldered over to prevent leaks.

In many cases it is preferable, and sometimes even necessary, to use wall fixtures, as they remove all danger of causing leaks in roofs and are equally servicable where roofs are pitched as when they are flat. The details of this fixture are in general terms the same as those of the roof fixture just described. The upright posts have a total length of twenty feet, fifteen feet of which stand above the top of the wall, and the remaining five feet are used for fastening the structure to a piece of plank previously secured to the side of the wall. This plank should be five feet long, about ten inches wide, and two inches thick. It should be spiked to the wall with seven-inch spikes, and will then form a substantial base for the support of the structure carrying the wires. The upright posts and the cross-bars are the same size, and are arranged in the same manner as those of the roof fixture.

Where not more than a dozen wires run in one direction, they may be supported by single fixtures, with one, two or three cross-arms. The general directions given for double fixtures of the same class may be applied with equal propriety, and either the roof or wall fixture may be used as occasion may demand. The usual length of single roof fixtures is about twelve feet, and the size of stock five by five inches. Angle irons are attached by means of lag screws to the foot of the upright and to the roof. The fixture is firmly braced on three of its sides by rods of one and one-eighth iron, hammered out at the ends, and fastened to the upright and to the roof by lag screws. The first cross-arm is twelve inches from the top of the upright, and the second and third eighteen inches from centre to centre. The two middle insulators are usually twelve inches apart; each of the others nine inches, and the outside insulators three inches from each end of the cross-arms.

The same description applies equally to single wall fixtures, except, of course, the method of attachment, which is similar in every respect to that of the double wall fixture.

The usual insulator employed in housetop work is the glass insulator, either "Pony" or Western Union size. Hook insulators are undoubtedly preferable in everything except cost.

All fixtures, cross-arms and boards should be of white pine and thoroughly painted. Spruce should never be used. Housetop fixtures should invariably be guyed against sideways strain.

If the wires pass in a straight line with the fixture, there should be two guys placed, one on each side of the fixture, to hold it against the side pressure produced by the wind acting on the wires. In case a section on one side of a fixture is longer and heavier than the section on the other side, a guy should be fastened to the fixture to pull against the strain produced by the heaviest section. In case the line makes an angle at the fixture, the guys should be disposed so as to pull against the strain. For guy wire use No. 9 galvanized iron. In arranging all guys the general principle should be remembered that the fixture will simply hold up the line and the guys must be strong and taut enough to resist all lateral pressure.

Fixtures should not be more than from 150 or 200 feet apart. Sometimes when a single line is to be run, light iron attachments are made use of, such as tripods, which, as their name indicates, are three-footed fixtures of round iron carrying an insulator on the apex of the triangle caused by the union at the top of the three legs. Ridgepole fixtures and chimney irons are other forms of light attachments which are more or less useful for light work.

Q. 138. What is the use of insulators in telegraph or telephone lines?

A. The use of insulators on aerial lines is to prevent the loss of electricity at the points of support. They must, therefore, be constructed of some substance which is as nearly as possible a non-conductor. It is essential that the electricity should arrive at its destination as little diminished in volume as possible, in order that it may thoroughly and easily perform its office.

To this end the conductor must be insulated at every point of support, both from the earth and from any other conducting wire which may be on the same poles.

The fact that some bodies offer very great resistance and that other bodies offer very little resistance to the passage of electricity, has rendered the electric telegraph possible. As all substances conduct in a greater or less degree, there is always more or less leakage to earth, and the working value of a telegraph line is the difference between the resistance of the insulators and the resistance of the conductor. It is, therefore, obvious that the better the insulation the better will be the operation of the line. When a wire is carried through damp places, underground, or through water—the insulation has to be continuous and the wire must be covered with India rubber or gutta percha.

Q. 139. In choosing insulators, what points should be considered?

A. In the choice of an insulator, the following conditions should be taken into consideration:

The surface between the point where the line wire touches and the substance of the pin bracket or pole should be as long and also as narrow as can be attained.

The material of which the insulator is composed should be as perfect a non-conductor as possible.

The insulator should be of such a form that its exterior surface will be thoroughly washed by rain, yet that its interior surface shall not be reached by rain.

It should have a surface which repels moisture.

It should be strong enough to resist any strain likely to be brought to bear on it.

It should be economical in first cost.

There is, however, no insulator that combines all these virtues, and the best way is to choose that which comprises the majority of them.

Hard rubber is one of the best insulators, but soon loses its surface and becomes rough and spongy when exposed to the weather. Glass, regarded simply as a non-conductor, is one of the best, but is objectionable from the fact that its surface has a great affinity for moisture, and will be covered with a moist film in nearly every state of the weather. It is, however, both cheap and convenient; and these considerations, in this country, so override all others that it is almost universally used. T. D. L.

### Cincinnati Notes.

To the Editor of The Operator:

SIR: I clip the following from the Cincinnati Enquirer:

About fifty of the leading telegraph operators of Cincinnati, Dayton, Hamilton and other points in Ohio, met in this city yesterday to perfect a permanent organization and mature some plan to prevent the cutting of wages. The session was with closed doors, but the men were determined to unite together so strongly that the telegraph company would not dare to refuse them a respectful hearing and duly consider their demands. One point of which the "Knights of the Key" complained is that they are frequently compelled to work on Sunday without receiving any additional compensation. They also fear, unless measures for protection are adopted, that the company will cut wages, which, it is claimed, are now entirely inadequate. Telegraphers unions are being formed all over the country, and the organization here numbers about fifty men, embracing the best operators in the city. On the second Sunday in July a meeting of the telegraphers from every part of Ohio will convene in this city, at which a State Union will be formed. One of the operators declared yesterday: "We know our power, and intend to use it. Not, however, to intimidate or threaten the company, but in a gentlemanly, respectful manner. We don't intend to strike, and we hope to settle all our differences by arbitration."

The movement in this city has already assumed formidable proportions, but everything is conducted with the utmost secrecy.

As there are several misstatements in this article, while the truth is so woefully exaggerated, I would ask for space in your columns to state



the facts. The operators here receive extra compensation for all Sunday duty, notwithstanding the *Enquirer's* statement to the contrary. I have heard no complaint, except from a few malcontents, of receiving "entirely inadequate" salary. Our salaries compare favorably with those of other large offices, and we are fortunate in having competent and popular management.

As stated in *THE OPERATOR* of June 15, a union of telegraphers has been organized in this city, its object being the same as that of the society recently organized in New York. One of its purposes is to aid its members when sick, and thus stop the everlasting circulation of petitions, appeals, etc. It is NOT a secret organization, and already numbers among its members four-fifths of the best telegraphers in the city, railroad and commercial.

The outlook for the next meeting is very encouraging. It will show the membership of this district to number at least one hundred and fifty, with bright prospects for the future.

As far back as I can remember, when any manner of organization has been effected among telegraphers, there has always been a certain number of snivlers and agitators, who endeavor to misrepresent its purposes. It is evident the *Enquirer* reporter talked with some one of this class.

Mr. J. R. Calder, general agent of *THE OPERATOR*, made us a flying visit last week. He left for the South Monday morning. He has had phenomenal success among all classes of telegraphers in his work.

Mr. Frank Farley is our latest arrival. Quite a number of A. U. operators have been transferred during the past month, but business is very brisk and there is little danger of anybody being "let out." GREFFIER.

CINCINNATI, O., June 24, 1881.

#### Milwaukee Melange.

To the Editor of *The Operator*:

SIR: Matters here remain in the same semicomatose condition previously reported. Some changes are evidently to be made in the force by removals, and others are rendered necessary by resignations. In connection with these changes I might mention that a certain person in some slight authority here has drawn down upon himself the indignation of the force by what they consider an exhibition of petty spite toward a N. W. operator, who thought of bettering his position by accepting a situation in the Chicago W. U. office, though not without giving the Milwaukee people due notice. The operator was to have a leave of absence to visit relations, but at the last moment received the information that "unexpected complications" would prevent his going. It turns out that the person of slight authority intended that when the operator who dared to think of accepting a position outside of Milwaukee should return from his vacation in the usual condition of impecuniosity, he should be told that his services were no longer required. The "unexpected complications" arose when Manager Weller (to his credit be it said) refused to indorse the action of the person of slight authority. It is generally believed that the latter will soon be relegated to a position which will allow of less abuse of authority, as the above is not an altogether isolated case.

From the West comes news of considerable importance. At Minneapolis both the chiefs, Messrs. Rogers and Vanbergen, have resigned and taken their departure; Mr. Rogers to accept a position in a train dispatcher's office in that city, Mr. Vanbergen going to Bismarck, Dak., as manager, vice Mr. J. M. Carnahan, who has filled that position for the past six or eight years. The vacancies at Minneapolis are not as yet permanently filled. At St. Paul, Chief Hughes has resigned, accepting an important position in the office of the St. Paul & Omaha road. Mr. Davison fills his place, and is in turn relieved by Mr. Anderson, both highly-esteemed St. Paul boys. The policy of parting with such gentlemen as Messrs. Robertson, Rogers and Vanbergen, of Minneapolis, and Mr. Hughes and Manager Jilson (who, it is rumored, is also to resign), of St. Paul, is, to say the least, of doubtful expediency. Whatever else may be said, the new management is losing a number of efficient and popular employees.

Supt. R. H. Hankinson, of Minneapolis, passed through Milwaukee on the 21st, apparently in excellent health and spirits.

With this issue, "Octopus" bids a fond adieu to the columns of *THE OPERATOR*, leaving for parts unknown.

Au revoir!

OCTOPUS.

MILWAUKEE, June 22, 1881.

#### The Cable Rivalry.

To the Editor of *The Operator*:

SIR: Rumor says that cable rates will shortly be reduced by the Anglo Company to 12½ cents per word. This means a declaration of war against Jay Gould's American enterprise. How it will result cannot now be determined, but that the fight will be prolonged and bitter admits of no doubt.

The Western Union, by its contract must furnish the Anglo with all proper facilities for receiving and distributing its enormous business all over the country and at a stated rate of compensation.

It does not appear, upon the face of affairs, how the former company can avoid rendering the same efficient services to its English rival as heretofore. I say rival, because the Western Union and American Cable Co. are both controlled by Mr. Gould, and their interests will be identical; therefore when the Western Union attempts to run an opposition cable traffic, a clash between the two cable companies will certainly occur.

The subsequent developments promise to be of a very interesting character. The Anglo Company has for several months past been represented on this side of the water by eminent legal talent and the tactics of the Americans have been closely watched. On the other hand, Mr. W. J. Dealy, General Manager of the new company, is now in London perfecting the arrangements for that side, and Mr. Dealy is so energetic and thorough in everything he undertakes that the result of his work is a foregone conclusion. Many of the best English telegraphers have already been engaged, and the government is to a considerable extent a loser thereby.

But will the Anglo profit by this reduction in rates? The Gould Company, I believe, have announced a tariff of 25 cents per word, and if given the same facilities that its rival enjoys will probably have all it can do at that rate. Then if the Direct and French companies maintain the present 50 cent tariff, the American, with its two cables, can do a paying business, but it is very doubtful whether the Anglo, at 12½ cents per word, can reach the same result, even if its cables are worked to their fullest capacity for the entire twenty-four hours daily, to say nothing of the tolls on each message which must roll into Western Union coffers.

Altogether it will be an interesting battle, and the legal aspect of the case will not be the least in importance. Should the "Mephistopheles of Wall street," aided by his Napoleonic lieutenant, succeed in ousting our British cousins from Western Union soil, what then? Will the Anglo build new lines of its own, or is it even now promoting the formation of many seemingly insignificant lines of telegraph, and looking forward to their future consolidation. With that purpose consummated, will the wealthy and powerful English corporation "carry the war into Africa" and grapple with Jay Gould for a share of the land as well as the ocean traffic?

NEW YORK, June 27, 1881.

H. C.

#### Chicago Notes.

To the Editor of *The Operator*:

SIR: Since our last communication the weather here has been excessively hot and business heavier than ever. The rush has been so great that the manager found it impossible to get help sufficient to handle it properly. The night men are worn out and the day force are not in a much better condition. For a week or more the manager, assistant-manager and three or four chiefs had to take a turn at the key in order to help out. The day force were compelled to wait from one to two hours after their regular time before being relieved for lunch, and then told that they might eat at their tables and be allowed half an hour extra, or get back in a few minutes. Now, if the management would not be so hasty in laying men off for trivial of-

fences, and relieve their men with a little more regularity, they would not find themselves short-handed so frequently, and a better service would be rendered to the company.

The exodus still goes on, with no sign of abatement. Bill Hopkins, chief of the repairers, has resigned, and, it is rumored, goes with the Mutual Union as Superintendent of Construction. Robinson, of the A. U. here, takes his place.

Adam Biedler, Assistant-Chief, has gone to one of the bankers here on their private line. Ed. Quick has gone to St. Paul N. W. Tel. Co. V. C. Muse to Ogden; C. F. Patterson to Cleveland; Carpenter to Indianapolis.

The arrivals are: Messrs. Herr and Kennedy from Toledo, O.; W. H. Griswold from Little Rock, Ark.; Warth and Wells from Milwaukee; Kelcher and Delarand, from New York; Summers, from Toronto, Ont.; Welsh, from Pittsburgh; G. M. Reynolds, from Springfield, Ill.; Goodman, from Lafayette, Ind.; F. Miller, from Pittsburgh, and Miles, from Kansas City.

Geo. Willis is acting Asst. Chief, vice Biedler, resigned. Geo. Thompson, do., vice Mixer, resigned.

Quite a large sum has been collected in this office for the widow Hunt, at St. Louis, whose husband was killed a short time ago by the falling of a derrick while on his way to the office. This is a worthy object, and we commend it to the fraternity at large for general support.

The check boys here are now compelled to work one night each in the week until 8 P. M., without extra pay. The boys are on their feet for ten full hours each day, and take their turn Sunday as well. Surely this is a sufficient return for the compensation allowed, without imposing an extra two hours upon them each week.

Scene on a Cincinnati Quad.—Cin. to opr. "V." in Ch: "Is everything one word?" "I sent it one word?" "Yes, you send everything one word." "Well, so everything is one word. 73."

We have a society here which takes in the majority of the men in this office, and I might say in all large offices in the States. It is only a matter of time when we, like the company we work for, will be one grand consolidation. A strike, however, in any shape or form is not contemplated. The society is more of a benevolent and social character than protective.

#### Echoes from the Rocky Mountains.

To the Editor of *The Operator*:

SIR: In order to harmonize all interests, Mr. E. T. Greene, the efficient and popular manager of the W. U. office in this city, was on the 1st inst. retired, and Mr. B. R. Bates, manager of the American Union, appeared as his successor. Mr. Greene's retirement was deeply regretted, not only by the telegraph fraternity, but by the public in general. On Sunday, May 29, the employees of the office assembled in the operating room, and Mr. J. M. Hogan, on behalf of his associates, presented Mr. Greene with a magnificent gold-headed cane as a token of their regret at parting with him.

Mr. Greene responded in a witty yet pathetic manner in paying a very flattering compliment to his late subordinates.

Our new manager is a brother of D. H. Bates, Assistant General Manager, and a gentleman well known and esteemed hereabouts. He is a thorough telegrapher and will no doubt make an excellent manager.

Messrs. W. B. & W. H. Hibbard were among the callers this week. Mr. J. J. Dickey, the newly appointed Superintendent, was in town Monday and Tuesday of last week. Mr. Geo. A. Warren and wife left for New York on the fifteenth. W. L. Jones has returned from a four weeks vacation. Mrs. Laura Beach has charge of the W. U. office in the Windsor hotel and does a remarkably heavy business. Charlie Gough has accepted a position on D. & R. G. Railroad at South Pueblo.

John Q. Smith, formally employed in the general office of the D. & R. G. R. R., this city, has charge of that company's station at Cañon City. Miss M. A. Carpenter resigned on May 15th to accept a more lucrative and less laborious position in Leadville. Business is very heavy on all wires. Messrs. Herne, Smith, Webster, McDowell, Ryan and Henry are the latest additions to the force.

COLORADO.

DENVER, Col., June 18 1881.



### Old-Time Telegraphers' Association.

To the Editor of The Operator:

SIR: The project of a general gathering of old-timers in the telegraphic fraternity culminated, as telegraphers generally are aware, in a happy and completely successful meeting in Cincinnati on the 7th of September last. On this occasion, a permanent organization was established, styled "The Old-Time Telegraphers' Association," with the following officers: President, O. H. Booth, Mansfield, O.; Vice-President, Geo. W. Dugan, Jackson, Tenn.; Secretary, J. C. Mattoon, Cincinnati; and Treasurer, F. A. Armstrong, Cincinnati. The next meeting of this association will be held at Niagara Falls on the third Tuesday of September (Sept. 20) next. I have received the constitution and by-laws from the committee, from which I quote, as a guide to applicants for membership: "All persons of good standing, who were engaged in the telegraph business in any capacity previous to 1863 shall be eligible to membership of this association, and may be received upon the payment of an initiation fee of five dollars." "This association shall meet as often as once in each year, at such time and place as may be agreed upon at the preceding meeting," etc.

It is earnestly requested that the various telegraphic journals, as also telegraphers individually, will extend their aid in giving the notice of this meeting as widespread publicity as possible, to allow every one ample time to make preparations to attend. It is also urged that all applicants will notify the Secretary promptly, that their names may be registered and to enable the Committee of Arrangements to form as correct an estimate as possible of the number who will attend. This committee, otherwise, reports flattering progress. Remittances may be made to J. C. Mattoon, W. U. Tel., Cincinnati, O. Indications all point to a much more largely attended meeting. Further details will be published as rapidly as they develop.

J. C. MATTOON,  
Secretary "The Old-Time Teleg. Ass'n."  
CINCINNATI, O., June 25, 1881.

### The Telegraphers' Union of New York.

To the Editor of The Operator:

SIR: The District Council of the Telegraphers' Union of this city met on Sunday, June 19, for the purpose of completing their organization. They supplemented the plan of organization embodied in the constitution by appointing standing committees to take charge of the different branches of business. The first one on organization, to establish and inspect branches and audit their accounts, is composed of one member from each branch. One member from each branch also constitutes an employment bureau. A committee on resolutions is formed in the same manner, and a committee on statistics and information is composed of five members.

Encouraging reports were received from all parts of the country showing that the Union had spread with unprecedented rapidity to all the large cities and towns as far south as Galveston and as far west as Ogden. In New York the membership is beyond the expectation of the most sanguine.

Resolutions were passed recognizing the great duties devolving on branch officers in keeping the members in line, and instructing the committee on organization to bring the ladies of the profession into the union.

The first footstep of policy was contained in the following resolution, which was unanimously adopted:

"Resolved, That this union will heartily co-operate with the officials of all railway and telegraph companies in enforcing the rule which excludes every one but employes from telegraph offices."

H.

### The Chicago Brotherhood of Telegraphers.

To the Editor of The Operator:

SIR: The telegraphers of Chicago, to the number of about one hundred and twenty-five, held a meeting Sunday, June 12, for the purpose of forming themselves into an organization, the objects of which are two-fold. The first is to bring out the better element in the profession as a class, in the way of social improvement by the promotion of industry, economy and temperance.

The other, though not the less important, is to make themselves—in a measure at least—free from the anxiety which comes with illness and its increased expenses.

The name of the organization being decided upon—"The Brotherhood of Telegraphers"—the officers were duly elected, and a constitution and by-laws adopted.

After some little discussion, it was finally agreed that in case of illness, a member should be entitled to draw ten dollars a week from the Association, the members meanwhile, as far as possible, endeavoring to fill in his time. While it seems at first as if it would be too great a tax to attempt making up the entire time, it is thought that, divided up among so many, the benefit will more than compensate for the burden.

The meeting was a thoroughly representative one, a feeling of clanship seeming to show itself in the hearty greetings, and the entire absence of the petty jealousies which so often come to the surface, even in the early stages of such organizations. Greetings are in order from kindred organizations in sister cities.

B.

### Cleveland Chronicles.

To the Editor of The Operator:

Business has never before been so heavy with us as it is at the present time, and the force, though large, is quite inadequate to insure dispatch. Business suffers severely on all hands, and when a man is sick on the night force, which is almost a daily occurrence among so many, some tired man who has already wrought a hard day's work is compelled to fill in his time until we are led to inquire if it is any wonder that operators in our large offices bear evidence of having the fate of the nation on their shoulders.

We regret to chronicle the severe illness of Mr. C. W. Heaton, who is suffering from congestion of the lungs.

Prominent among the new arrivals here are Messrs. L. T. Burghoff, L. G. Somers and James R. Mayer. Mr. Patterson, late of the W. U. office, Chicago, is an acquisition to the American Union in this city. Messrs. J. M. Cronenberg and Lester H. Hull, formerly of Cleveland, but late of Toledo and Wellsville, Ohio, respectively, called on us the other day, looking happy. Mr. F. E. Now, late of this office, is "now" at the city office of the Tuscarawas Valley Railroad.

At the instigation of several victims we respectfully request that non-subscribers to THE OPERATOR desist from tampering with the wrappers of papers belonging to others.

I. DUNNO.

CLEVELAND, Ohio, June 23, 1881.

### Washington (D. C.) Notes.

To the Editor of The Operator:

SIR: Business is rather dull here, as usual during the summer months. The most of our work is "relayed" business. John Stevens, J. W. Burruss and Geo. W. Kern have taken summer vacations. The A. U. is still open. We were surprised to learn, on the 20th inst., that our friend and co-laborer, R. J. Wynne, had resigned. "Bob" was universally liked throughout the office, including the management. While we regret his departure from us, we congratulate him upon bettering himself. The American Rapid is flourishing, if we can judge by the many brilliant signs we see in front of its headquarters. The Mutual Union seems to promise well. R. T. J. Falconer has also left us, accepting a position with Middleton & Co., bankers, leased wire. A few of the boys contemplate a two weeks' vacation, but it is not at all general.

SUMM T. IMES.

### Baltimore Notes.

To the Editor of The Operator:

SIR: The Brush Electric Light Co. of Baltimore has been incorporated, and has held several meetings at the office of Mr. J. F. Morisson, General Manager. The Carrollton Hotel is now using the light with great success, and numerous other applications for the use of the light have been received from manufacturers, newspapers, hotels, etc., so that there is now little, if any, doubt that the success of the enterprise is assured.

W. O. Eastlake, for a number of years with the W. U., but more recently with the A. U.; has been elected a member of the Corn and Flour Exchange, and will engage in the grain trade. At the A. U. office some changes have taken place. Miss O'Donnell has gone to Deer Park, and Miss McCoy to Oakland, Md., for the season; W. Lenz has gone to Canton, vice Miss Clark, resigned to enter into the state of matrimony; W. A. Dunn, late manager of the Continental, has resigned and accepted a similar position with the American Rapid Co. Tom Farley has left the W. U., and will go with the Mutual Union upon its arrival here. A telegraphers' society is being agitated among our railroad operators.

EXCELSIOR.

BALTIMORE, Md., June 21, 1881.

### Telegraphers' Aid Society.

To the Editor of The Operator:

SIR: The following is a statement of the affairs of the Telegraphers' Aid Society for the quarter year ending June 7, 1881.

Cash on hand March 7, 1881.....	\$419.71
Received since above date.....	\$173.00
Paid benefits to members.....	\$72.00
Paid expenses.....	29.60

Total payments.....	101.60
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Net receipts for quarter.....	71.40
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Total cash on hand June 7, 1881.....	\$491.11
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Members elected during quarter.....	14
Total membership.....	127

Very respectfully,

J. W. MORELAND, Secretary.

NEW YORK, June 27, 1881.

### American Exhibitors at the Paris Exhibition.

The following list of the American exhibitors at the Paris Electrical Exhibition of 1881, to open August 1, is published:

Electro Graphic Manufacturing Company, of New York; White House Mills, Hoosac, N. Y.; Weston Electric Light Company, of Newark, N. J.; Clinton M. Ball, Troy, N. Y.; Standard Electric Light Company, of New York; G. Morgan Eldridge, of Philadelphia; Smithsonian Institution, of Washington; Louis G. Dreyfus, of New York; Joseph M. Hirsch, of Chicago; Elisha Gray, of Highland Park, Ill.; Electric Purifier Company, of New Haven, Conn.; W. G. A. Bonwill, of Philadelphia; United States Electric Light Company, of New York; Thomas A. Edison, of New York; August Parts, of Philadelphia; George Cumming, of New York; L. G. Tillotson & Co., of New York; Dodson & Egée, of Philadelphia; United States Signal Office, Washington; Robert Haase, of Indianapolis, Ind.; Charles W. Hubbard, of Boston; Alexander Graham Bell, of Washington; Electro Dynamic Company, of Philadelphia; W. J. Phillips, of Philadelphia; Western Electric Manufacturing Company, of Chicago; Volney W. Mason & Co., of Providence, R. I.; A. Emerson Dolbear, of Somerville, Mass.; Theodore Schnanssen, of Allegheny City, Pa.; United States Patent Office, Washington; Connolly Brothers & McTighe, Washington, D. C.; American Electric Company, New Britain, Conn.; J. F. Bailey, Paris; John Michels, New York; New York Electric Light Association, New York; August Partz, Philadelphia; Edward W. Serrell, Jr., New York.

Experiments on radiophony are still conducted by M. Mercadier. Lately he reflected light from a piece of silvered glass, behind which is a small reservoir of air, having a thin plate of mica, or caoutchouc, which receives the sounds to be transmitted through a tube. At the place to which the light is sent one of the author's small glass tubes, with a smoked piece of mica, is used to receive the light, which is there concentrated by a lens or concave mirror. With this arrangement speech was distinctly though faintly heard at a distance of about 20 miles, although the windows of the room in which the speaker was stationed had been closed. It was also found that the solar rays gave the best effects when they were hottest.



## DASHES HERE AND THERE.

The pay of the operators on the Cincinnati, Indianapolis, St. Louis & Chicago Railroad has recently been advanced 10 to 15 per cent.

Lightning recently struck the switch-board in the Western Union, Norwich, Conn., office, filling the place with flame and slightly shocking the operators.

A young electrician of Cincinnati claims to have improved the electric light by using iridium burners. He expects to furnish them at \$7 per burner.

A telegram dated Havana, June 26, says that the cable steamer Dacia has successfully finished repairing the second cable between Havana and Key West.

Mr. A. H. Doane, of Cincinnati, claims to have invented an electric motor which he can attach to a street car at an expense of \$50 and then run the car for 10 cents a day.

Advices from East India convey the intelligence that the Thakore of Morvee—whoever he is—has introduced the electric light into his palace.

Mr. E. W. Farnham, already well known to our readers, advertises in this issue that he is prepared to teach the popular system of taktigraphy by mail. See his advertisement.

The experiment of lighting the streets of Albany, N. Y., by electricity has so far been successful that the Superintendent of Lamps has been authorized to cut off the gas lamps on the electric light circuit.

A London paper says that shares of the Brush Light Company are quoted there at over 100 per cent. premium—that is to say, the £10 shares, on which only £4 are paid, are quoted £3 10s. to £9.

R. J. Powers, Jr., is the name of the late operator at Wathena, Kansas. He forgot to deliver a train order on the 17th ult., which caused a smash-up. There were two people killed and three injured, one of the latter being considered beyond recovery. Mr. Powers is now languishing in jail at Troy, Kansas.

Next Wednesday, July 6, Mr. Edison will ship his large dynamo machine to Paris. The engine has 200-horse power, and its speed is 355 revolutions per minute, thus equaling in power and speed a large locomotive running at the rate of a mile a minute. It will work 2,000 electric lights of sixteen candle-power each.

The Pond Indicator Co., of New York, last week placed their first instruments in Altoona, Pa., the P. R. R. having adopted them to protect their property in that city from fire. The indicator is an ingenious call system, which will undoubtedly, as soon as introduced, take the place of the devices now in use for that purpose.

Experiments regarding the velocity of light show that the electric light travels faster than sunlight. The velocity of the latter is found to be 186,500 miles a second, while the light from an electric lamp travels at the rate of 187,200 miles a second, due probably to the fact that there are more blue rays in that light.

The electric railway between the Lichterfeld station and the Central Cadet Institution, in Germany, proved such a success that it has been decided to extend it. The line is first to be continued to Teltow, and subsequently to Potsdam. At road crossings the conductors of the electric current are in future to be laid under the ground, so that horses may not be exposed to a shock.

Messrs. John Wiley & Sons have an interesting advertisement in this issue of Naudet's popular and important work on electric batteries, a copy of which every telegraph and telephone man should purchase and read. The advertisement also contains a list of useful scientific books published by Messrs. Wiley & Sons, of particular value to the electrical fraternity. Catalogues will be mailed free.

Mr. A. B. Smith advertises the Barron Flexible Key Knob in the present issue. These key knobs had a very extensive sale among telegraphers when advertised before, a short time ago, and the universal indorsements they received were of the most unmistakable character. There is no reason why they should not have an equally large sale now. Every one troubled with telegraphers' paralysis should give them a trial.

A message from South America announcing the discovery of the comet suffered terribly at the hands of the customary telegraphic error fiend. As received here, it read: "Buenos-aeres. June first. Eighteen hundred koen comet fi hours south thirty degrees Gould."

The probable drift of it is believed to be that Jay Gould, as one of the early birds, discovered the comet in right ascension "fi hours," and declination 30°.

The Blanchard Manufacturing Co. have added to their advertisement a brief description of the principal food cures manufactured by them, which will be found interesting reading. A few dollars expended in these foods will be of more benefit in making one well and keeping him well than a much larger amount devoted to drugs. Telegraph and telephone men need these food cures more than most other classes, and should at least give them a trial. Send for descriptive circulars, which the company will mail free on application.

The Magnetos of the Gilliland Electric Manufacturing Company, of Indianapolis, Ind., have played several games of base-ball since their first with the Telegraph nine, beating the Butler University nine in two games—scores, 26 to 5 and 11 to 6, and the East End nine—score, 20 to 7, and being defeated by a nine composed of seven deaf mutes from the deaf and dumb asylum and two professionals from town, by a score of 22 to 9. They have been compelled to stop playing for two or three weeks, a stress of business keeping them close at work. They expect, however, to play the Telegraph nine again soon.

The *Irish World* of this city indignantly announces that messages from Mr. Quinn, Secretary of the Land League, are no longer permitted to come over the cable, in proof of which it publishes the following:

"DUBLIN, June 16, 3 A. M., 1881.

"My message for this week's *Irish World* is refused at the office of the Direct United States Cable Company. The previous order to accept has been cancelled.

QUINN."

The editor says he will not be "balked in this way," and, if the Direct Cable Company will not send the message, he will see what can be done with the French Atlantic Cable.

The central division of the Western Union Telegraph Company, which heretofore has comprised all that territory west of the western extremity of New York, Pennsylvania and West Virginia, and from the lakes on the north to the Ohio River on the south, and west to Salt Lake, also all territory lying north of Arkansas and west of the Mississippi River to Salt Lake, in charge of Col. R. C. Clowry, General Superintendent, with headquarters at Chicago, has been extended by order of Gen. Eckert, so as to include California, Oregon, Nevada and Arizona, heretofore called the Pacific division, with F. Jaynes, Division Superintendent. Under the arrangement the central division will embrace the country west of Pennsylvania and north of the Ohio River.

## NEW YORK CITY ITEMS.

### Echoes from 195.

Mr. George Cumming is the inventor of a new key.

The Bunnell keys in use at 195 give general satisfaction.

Mr. P. J. Tierney succeeds Mr. Read on the Philadelphia circuits.

Heber C. Robinson, ex-manager of the Philadelphia W. U. office, was at 195 last week.

Miss Annie Ross, who had the misfortune to sprain her ankle, has returned to the office after two weeks' absence.

Mr. E. G. Read, a strictly first-class operator, has been transferred from the Philadelphia Quad to the cable department.

Mr. F. W. Baldwin transmits the race messages to the pool rooms over three circuits simultaneously on the ambidexter principle. He sends easily on the two keys with his right hand and on one with his left.

Supt. Geo. F. Milliken, of the Mutual Union, visited the operating room on Thursday last. He was warmly greeted by the facetious John Lenhart, who pronounced Mr. Milliken "the only decent man in the business."

Horse racing excites more attention at 195 this year than ever before. Even those who are opposed to betting on principle cannot resist the inclination to "pick the winners" for others who do not share their scruples.

Mr. James D. Reid returned from Europe last Tuesday, looking remarkably well. He was called suddenly to Paris on account of the illness of his daughter. The latter, Mr. Reid's friends will be glad to know, is getting better.

Some changes have been made at the switch-board. Mr. Leslie has been assigned to the western circuits, Mr. Catlin the eastern, and Mr. Gregory the southern division. Several "chairwarmers" have signified their intention to steer clear of the West in future.

In reply to a correspondent at 195, we would say that the telegram announcing the result of the Derby race, which was transmitted from the grand stand at Epsom to New York in five seconds, was repeated at London, Ireland and Tor Bay. It only consisted of one code word, and every preparation had been made to prevent delay, all business on each of the circuits being suspended for the occasion.

### Other City Items.

Mr. Frank W. Lord, formerly of the A. & P. office, is pleasantly situated as operator at the Fire Alarm headquarters in Mercer street.

Mr. Theo. S. Weaver, formerly with the Continental Telegraph Company, Spring and Broadway, has again been appointed Passenger Agent of the New York & Brighton Beach Railway.

The first annual picnic of the Telegraphers' Benevolent Union, of this city, took place at the Bellevue Gardens, Eightieth street and East River, June 20, and was a complete success. Many well-known telegraph and telephone men, with their families and friends, were present. Dancing was kept up until 3 A. M., and all heartily enjoyed the occasion. Much credit for the success of the picnic is due Mr. A. J. Gilman. The association, whose members are principally linemen employed by the W. U., Met. T. & T. and Gold & Stock telegraph companies, has only been in existence for about a year, and already numbers over one hundred members, among whom are many of our oldest telegraphers. The organizers expect that in the near future the association will spread over all the States in the Union.

## PERSONAL.

The democrats of Napoleon, Ohio, have recently elected as Treasurer of that township Mr. J. K. Withers, an old telegrapher.

The youngest and one of the most proficient telegraphic operators in Pennsylvania is Mary Denton, of Forestport, 10 years of age.

Miss Fanny Bullock, daughter of Ex-Gov. Rufus B. Bullock, was married at Worcester, Mass., on the 16th ult., to Dr. William H. Workman.

Mr. Patrick Sullivan, formerly of Bangor, Me., W. U. office, will have charge of the Wentworth House telegraph office, Newcastle, N. H., for the season.

Mr. W. A. Culp, formally of Nashville, Tenn., and more recently of Lexington, Ky., W. U. offices, has been reappointed Manager at Henderson, Ky., his first love.

Mrs. Mattie Lewis, formerly of the American Union Company, succeeds Miss Hattie Partridge as "manageress" of the ladies' department of the Boston office of the Western Union Company.

Mr. J. F. Henrici, Chief Operator A. V. R. R., Pittsburgh, Pa., has resigned to accept a position in the General Superintendent's office B. & O. R. R., same city. Mr. Jno. B. Stewart fills the vacancy.

An inquirer wishes to learn the whereabouts of R. G. W. Denison, a telegrapher, formerly of 145 Broadway. He went to Annapolis, Md., and for a time was manager there. He was last heard from at St. Louis.

Mr. E. E. Adams has resigned his position as manager of the W. U. office and accepted a situation in the dispatcher's office, C. & N. W. middle division, at Belle Plain, Iowa. Mr. Fred Rollins is his successor.

Edward McWilliams, a lineman of the Penn-



sylvania Railroad, fell from the liberty pole at the intersection of Grand and Washington streets, Jersey City, on the 27th ult., and died the following day.

L. M. More, formerly manager of the A. U., Buffalo, N. Y., Dock office, and more recently manager of the W. U. Dock office, has resigned. Mr. Thomas C. Eipper, an "old timer," has been promoted from the ranks to fill the vacancy.

At the meeting of the Great Northwestern Telegraph Company, held in Montreal, Hon. A. G. Bannatyne, the president, resigned, and was succeeded by Erastus Wiman, of New York. A. W. Ross retired as director, and was succeeded by Richard Fuller, of Hamilton.

At Danville, Ill., Mr. Chas. L. Kelley, former manager of the American Union, has relieved manager Helm, who has had the office for five years. The assistants are Jas. E. Blanchfill, chief; Jno. F. Shorter, of St. Louis, and Will Kennedy. The telephone is managed by Miss Eva Beck and is in a flourishing condition.

The A. U. Chattanooga office will be moved into the W. U. office to-day, July 1, with Mr. J. B. Norris, manager of the A. U., in charge. Chattanooga will hereafter repeat considerable of the Southern business that was formerly repeated at Montgomery. Two duplexes and one quadruplex will be added to the instruments in the office.

The position of assistant superintendent at Harrisburg having been abolished, Mr. H. A. Clute, who has held the position for fourteen years, leaves the employ of the Western Union Telegraph Company to-day, July 1, and will hereafter give his entire time to his telephone interest, for which he has the agency in six counties, including Harrisburg and Lancaster cities.

Mr. C. W. Hammond was, on June 10, appointed superintendent of telegraph of the Texas & Pacific, and of the International & Great Northern leased properties, with headquarters at Marshall, Texas. No operator will be permitted to work upon the line without Mr. Hammond's full consent. Mr. D. J. Healey will continue to act as assistant superintendent of the I. & G. N. telegraph lines.

The offices of the Great Northwestern Telegraph Co., beginning at Winnipeg, are: Superintendent's office, Thos. Prest, Supt.; Train dispatcher's office, Messrs. Egan and Foster, dispatchers; Syndicate general office, Mr. Rutherford, operator; Stonewall, F. Revell; Meadow Lea, M. C. Wright; Portage la Prairie railway office, Messrs. McNab and Foote; Portage la Prairie, head office of the western division, H. J. Woodside.

The A. U. office at Rutland, Vt., has been closed, and the wires transferred to the W. U. office. The latter has been enlarged. Eighteen wires now enter the office, and thirteen sets of instruments are in use. Mr. L. G. Bagley, who has been manager for the W. U. for many years, is retained as manager of the consolidated office. Mr. F. W. Gary is chief operator; Messrs. E. H. Bruya and J. A. M. Jones day operators, and Mr. J. F. Murray night operator.

The Western Union and American Union offices in Harrisburg, Pa., will be consolidated after July 1, and will be in charge of Mr. Charles A. Bigler, at present manager of the American Union office. Mr. Miller, of the latter office, and Mr. Ziegler, of the Western Union, will be retained under the consolidation. The loss of Messrs. Boggs and Smith, who will retire, will be much regretted by their many friends. The latter gentleman has been tendered and accepted the position of manager of the Lock Haven office, while the former has not yet accepted one of several lucrative positions offered him.

At Norwich, Conn., on the 14th ult., during a thunderstorm, a flash came into every office and dwelling in which was a telephone. The appearance of the flame was the same in each case, described a jet of blue fire bursting out of the instrument and filling the room with an odor like that of burning brimstone. In the telephone exchange, where all the wires centre, the flame burst out and filled the room and the clerks left their posts and ran out. Nearly a dozen telephones in the city were more or less shattered, and the next day not an instrument could be worked in the city.

In addition to the appointment of Mr. C. W. Hammond, late superintendent of the A. U., St. Louis, to be superintendent of Jay Gould's Southwestern system of railroad telegraph lines, Mr. Isaac McMichael, formerly assistant superintendent to L. C. Baker, St. Louis, has been appointed superintendent of the Northwestern lines; headquarters at Minneapolis, Minn. Mr. W. W. Cummings, formerly chief operator St. Louis W. U. office, has taken Mr. McMichael's place. Mr. J. H. Topliff has been made day chief, *vice* Mr. Cummings, and Mr. T. P. Cook has been promoted to night chief, *vice* Topliff.

TEXAS & NEW ORLEANS R. R.—This is destined at no distant day to be one of the best roads in the South. We have in Mr. C. A. Burton, Houston, Texas, one of the best superintendents it has ever been my lot to work for. Mr. O. White, train dispatcher, is also a thoroughbred, and well liked by the boys. Then comes R. B. Donaldson, night dispatcher, strictly a first-class man. At Dayton Mr. J. D. Dunks is agent and operator, and G. H. Kitchens, night man. Six miles further east Mr. Moore is agent and operator, and twenty-three miles further Mr. George DeYoung is operator. Just twenty miles still further east is Beaumont, of which Mr. Frank Patrick is manager and A. W. Selvidge night operator.

ROME, GA.—The American Union and A. & P. offices have been closed here. Mr. Milton Orr, formerly of New York, resigned his position as manager of the American Union previous to the consolidation, and accepted a position as clerk and operator for the S., R. & D. R. R., at Dalton. His successor, Mr. C. G. Davidson, has been subbing at different places since the consolidation. He is now subbing for Mr. P. E. Murray, in Atlanta office, that gentlemen taking a month's vacation. The Rome office is managed by Mr. W. H. Adkins, assisted by Mr. John P. Higgins, formerly of Nashville. Mr. C. E. Woodruff has charge of the counter (American District) telephones and messengers, and does good service. The private line of Noble Brothers is manipulated by the Misses Joey Carnochan and Lila Noble. This line is connected with all the depots, steamboat offices, etc., in the city.

A touching scene took place at the Boston office during the last fortnight, upon the resignation of Mr. Joseph H. Twitchell, for the past twenty years superintendent of the delivery department of the Western Union's main office in that city. His departure from the office, on the 11th ult., was signalized by a demonstration of affection on the part of his subordinates and co-workers which cannot but remain the proudest trophy of his life. When the time came for his work to end, the office suddenly filled with employees of the several telegraph offices down town, including managers, receivers, operators, clerks, and, last but not least, boys, and before Mr. T. really noticed that anything unusual was going on, he found himself the centre of a very interesting scene. Mr. Charles E. Davidson, one of the receivers, thereupon presented him, one after the other, a massive silver water-cooler, the gift of the receivers; a photograph album, from the night clerks, whose pictures were within it; a meerschau pipe from the delivery clerks; a gold-headed cane from the eighty-odd messenger boys, and a fruit basket from business friends. The silver ice-pitcher was inscribed "Presented to Joseph H. Twitchell by his many friends, Boston office, W. U. T. Co., June 11, 1881," and the pipe bore the words "Our Chief, J. H. T." The whole affair was the outgrowth of the affectionate regard in which the recipient is held. Mr. Twitchell at length collected himself sufficiently to respond to Mr. Davidson's words, and, all things considered, made a very good speech, but there were "tears in his voice" as in his eyes, and his auditors were all sobbing, so that speech-making was a matter of the greatest difficulty. He will be succeeded by Mr. Henry Murphy, formerly Cashier at the American Union.

## MARRIED.

KIRSCHBAUM—MURPHY.—June 19, 1881, at Brooklyn, L. I., by the Rev. Mr. Hubbell, Mr. Louis N. Kirschbaum, of W. U. Telegraph Office, 195 Broadway, New York, to Miss Sabina K. Murphy, formerly of the W. U., and recently of the A. and P. main office, New York.

## BORN.

AUSTIN.—June 13, 1881, to Mr. W. A. Austin, Albany, N. Y., a son.

BROWN.—May 31, 1881, to Mr. Thos. Brown, operator, Dispatcher's office, P. & R. R. R., Philadelphia, a daughter.

WHITE.—June 12, 1881, to Mr. Howard White, operator Tide-Water Pipe Co., Titusville, Pa., a daughter.

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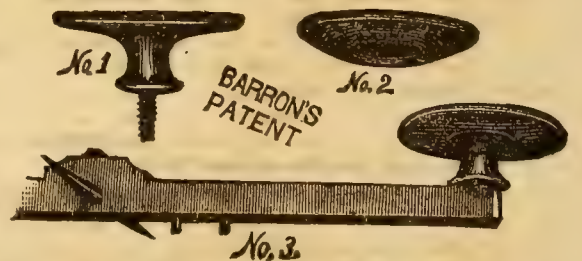
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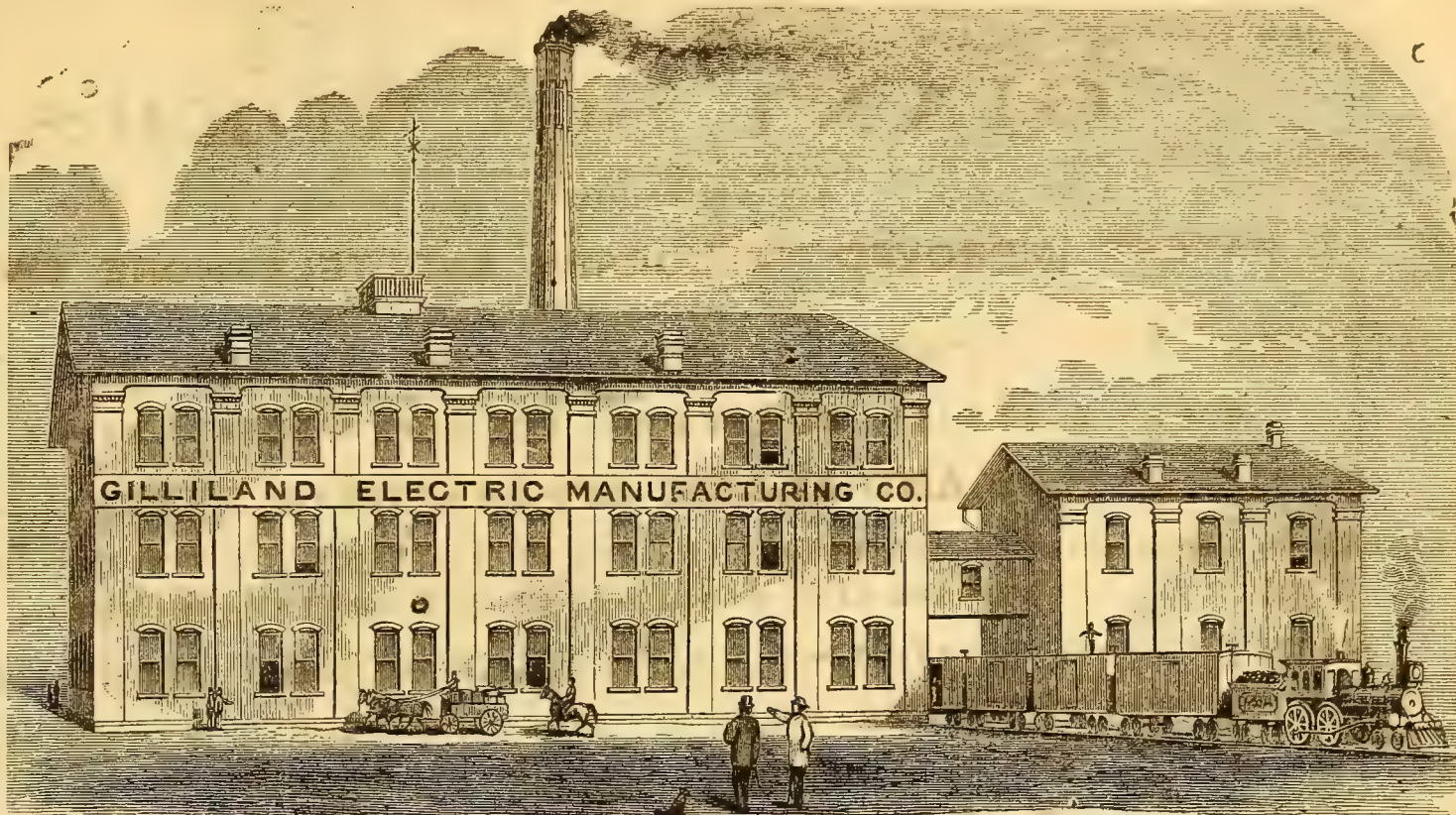


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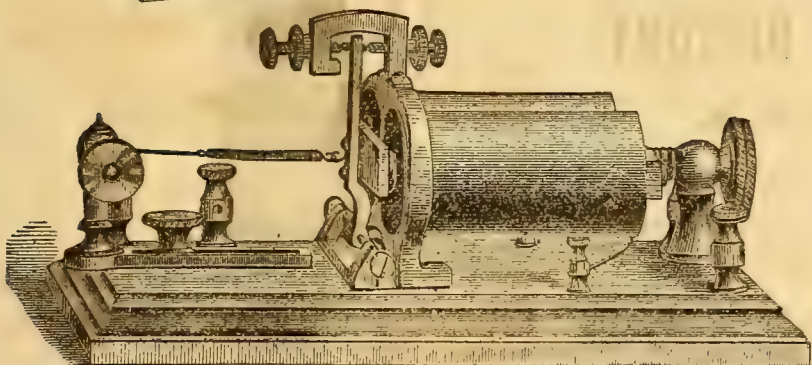
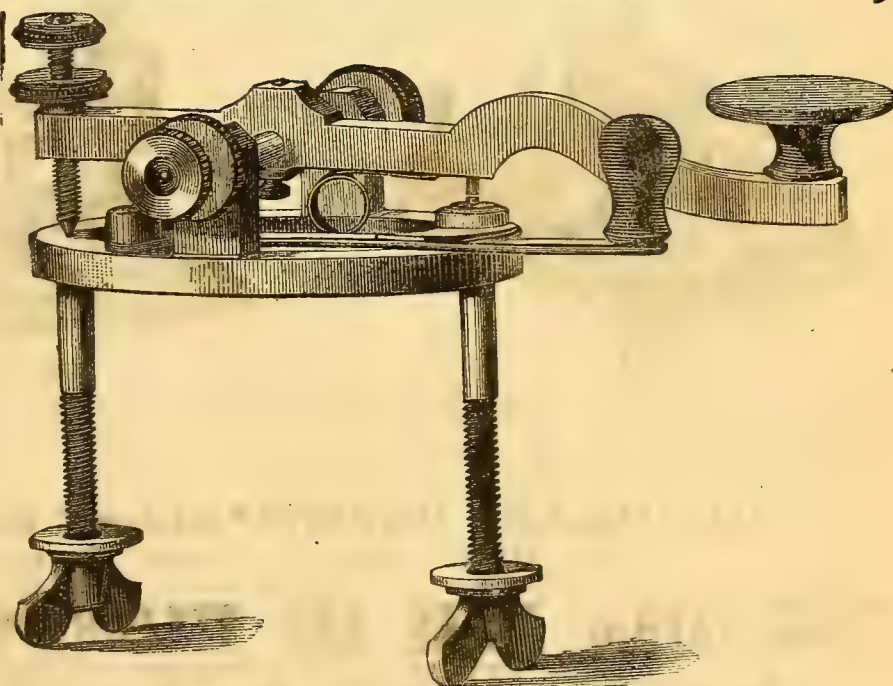
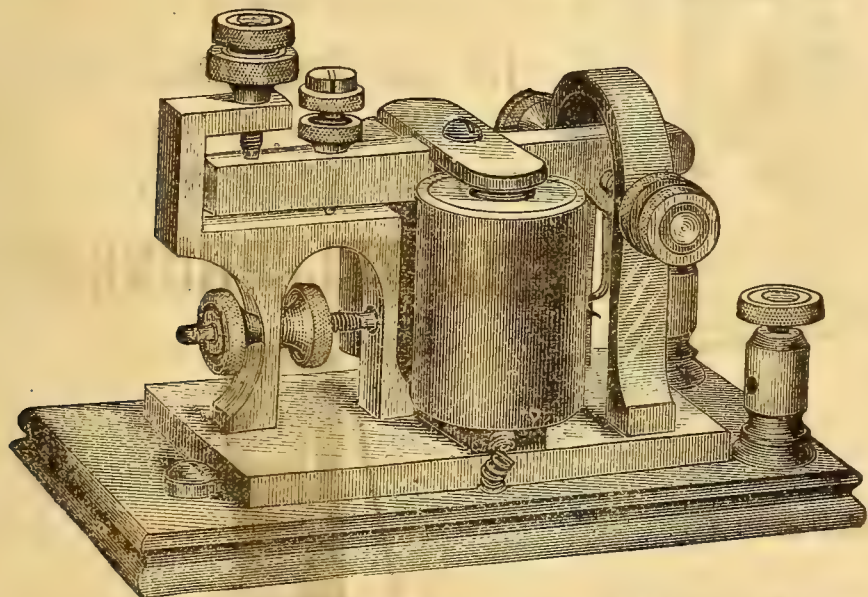


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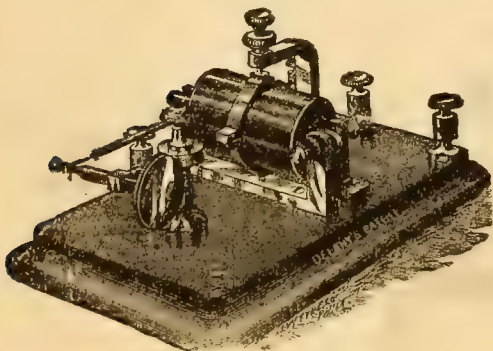
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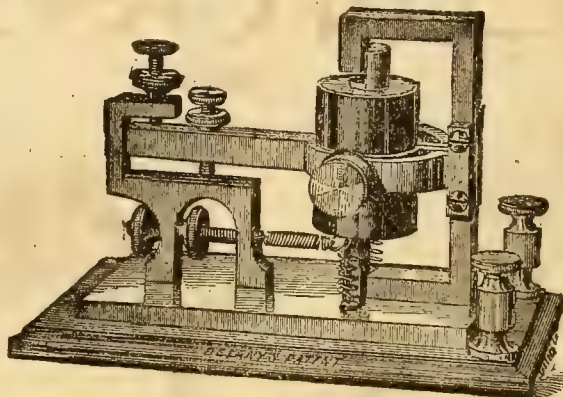
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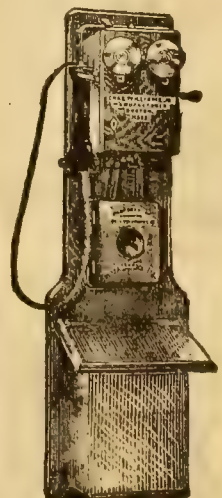
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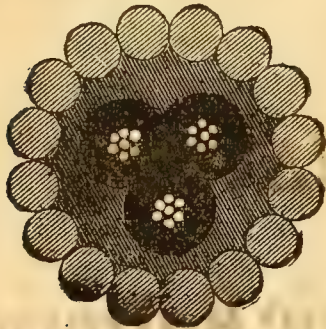
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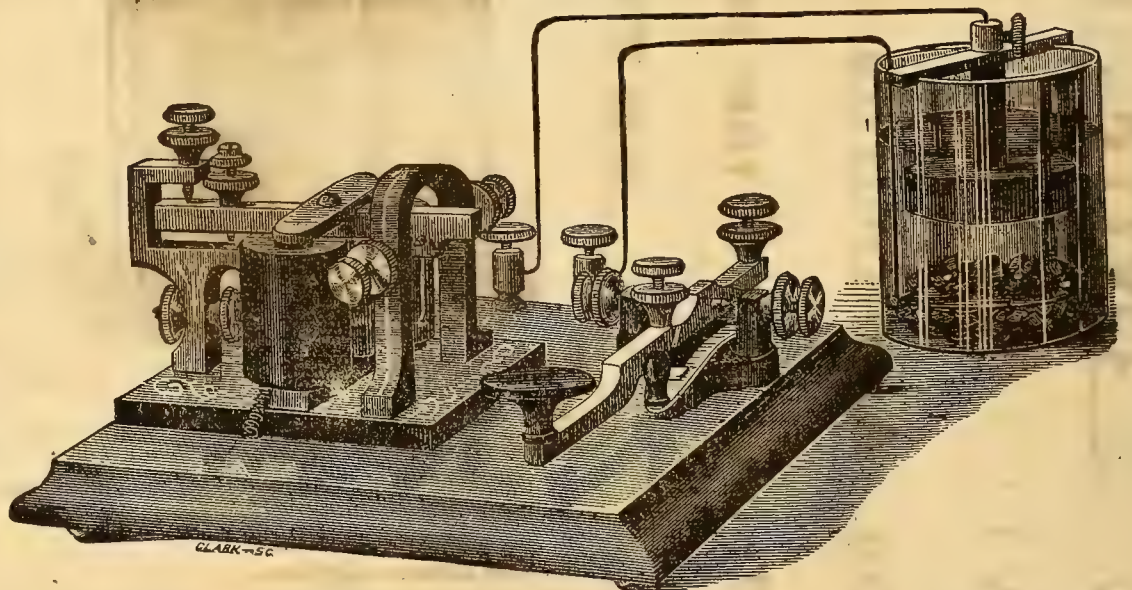
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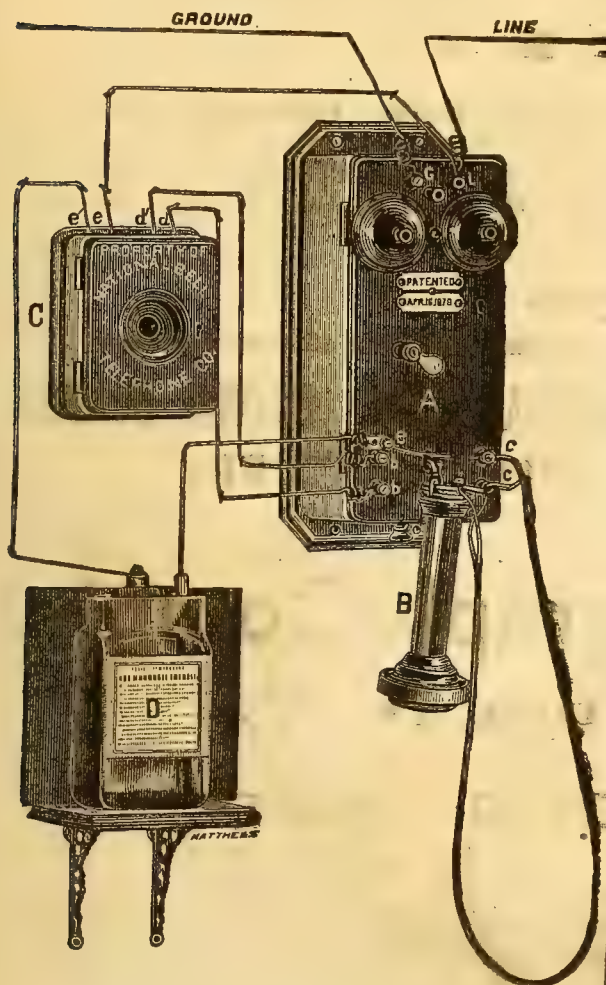
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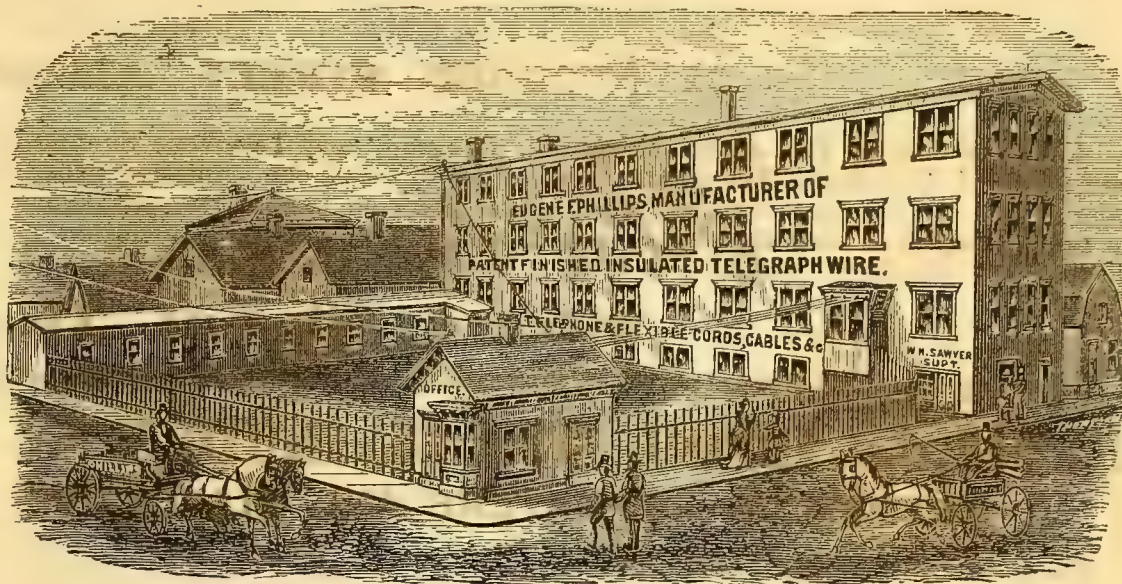
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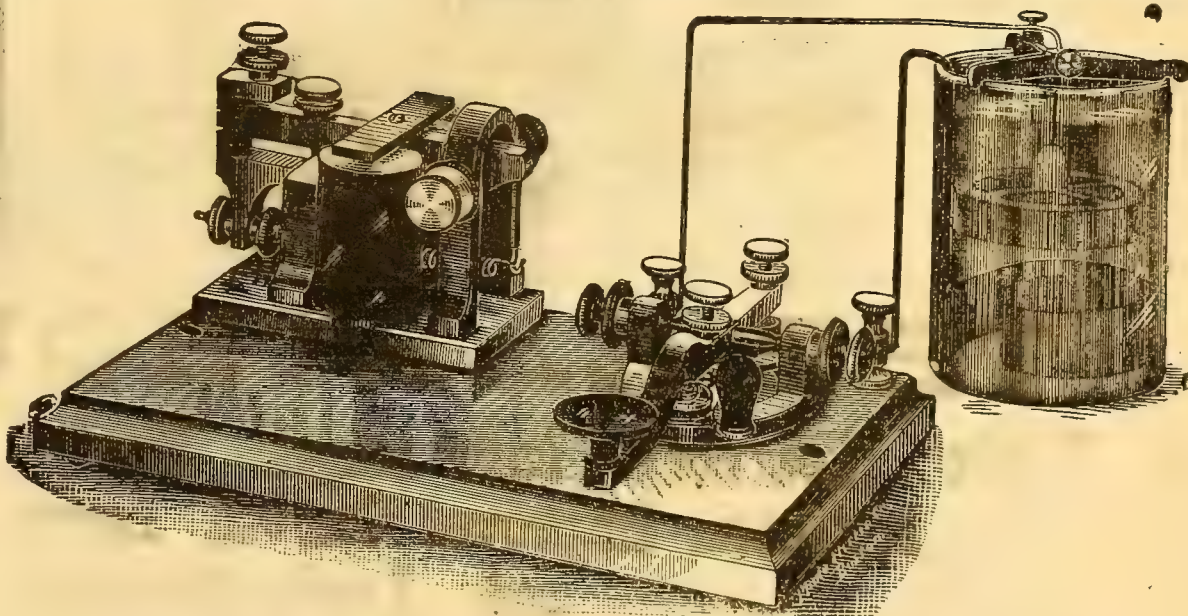
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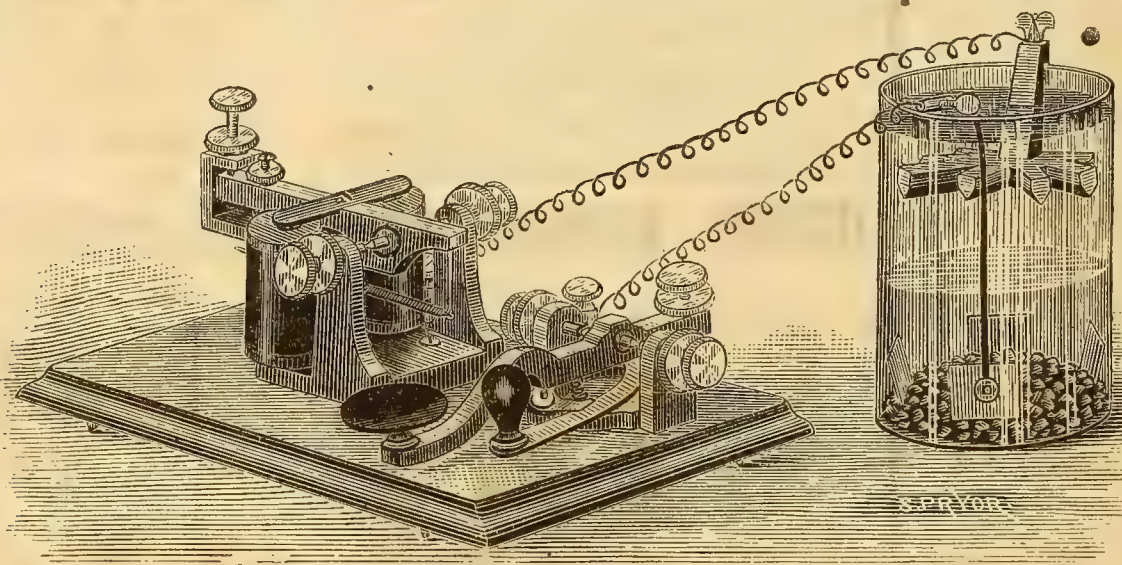
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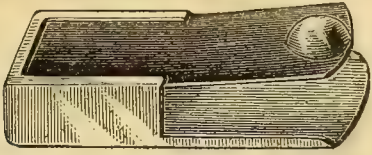
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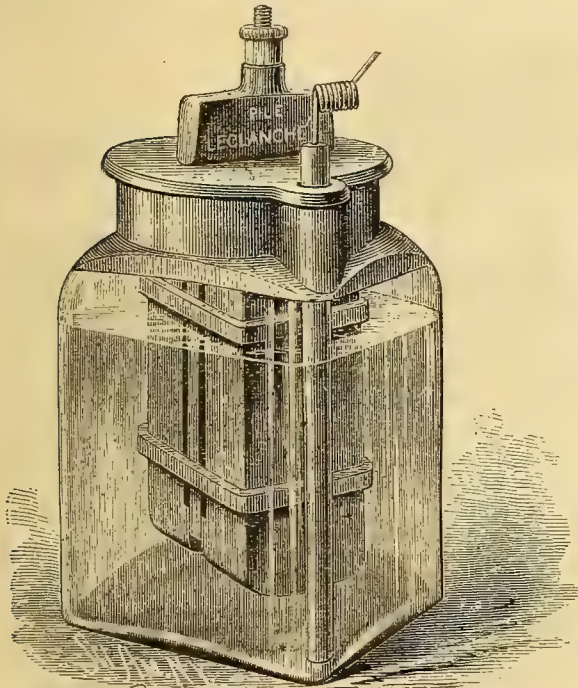
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No. 6 Wire in 1/4-mile bundles, 550 pounds per mile.  
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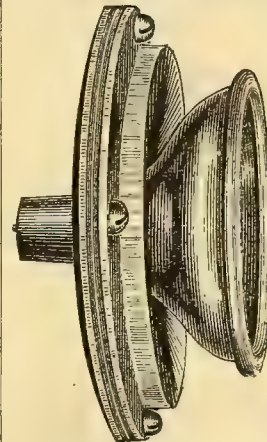
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Polished; an ornament to any  
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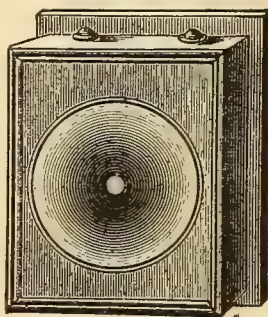
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are now prepared to receive orders for their

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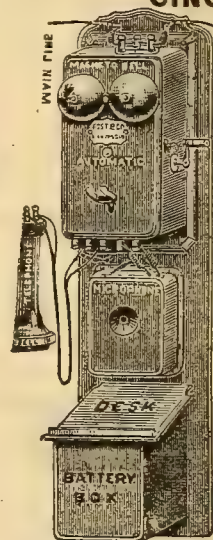
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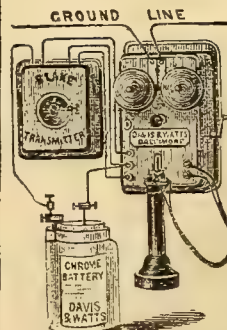
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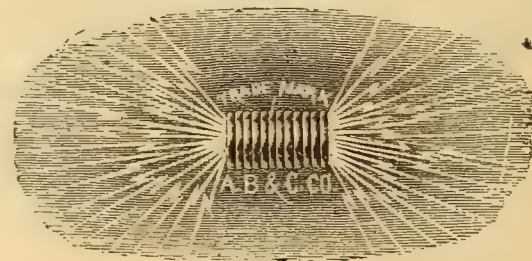
Owing to changing our Telephone system from Battery to Magneto, we have a large lot of our handsome nickel-plated bells, which we have put on new bases, removing all telephone connection, and will clear out at much less than cost of manufacture. They are wound to 30 ohms, with best silk-covered wire. Gongs are 3 1/4 in. diameter and very loud, working parts incased in nicked covers—which you like, either vibrator or single stroke.

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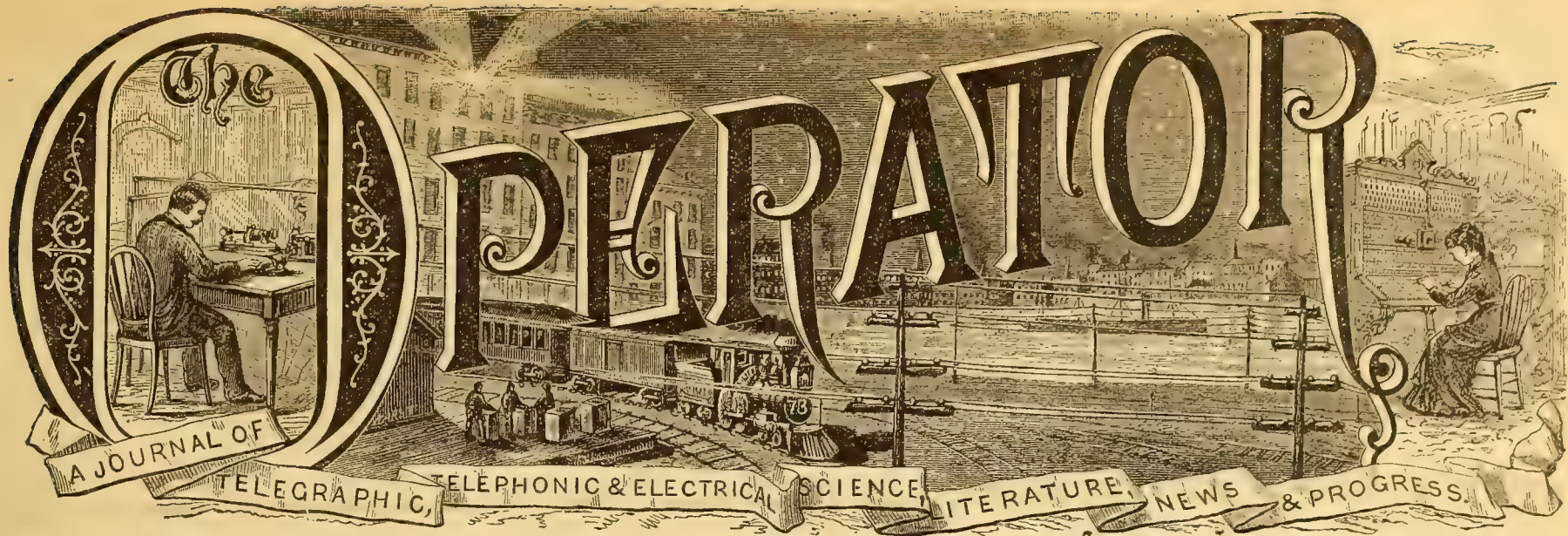
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VOL. XII.—No. 14.

NEW YORK, JULY 15, 1881.

{ ONE DOLLAR A YEAR.  
{ 5 CENTS PER COPY.

### THE MAGNET AND CHURN.

A magnet hung in a hardware shop,  
And all around was a loving crop  
Of scissors and needles, nails and knives,  
Offering love for all their lives;  
But for iron the magnet felt no whim—  
Though he charmed iron it charmed not him—  
From needles and nails and knives he'd turn,  
For he'd set his love on a Silver Churn!  
His most æsthetic, very magnetic, fancy took this  
turn—  
"If I can wheedle a knife or needle, why not a  
Silver Churn?"

And Iron and Steel expressed surprise;  
The needles opened their well-drilled eyes;  
The penknives felt "shut up," no doubt;  
The scissors declared themselves "cut out;"  
The kettles they boiled with rage, 'tis said;  
While every nail went off its head,  
And hither and thither began to roam,  
Till a hammer came up—and drove them home.  
While this magnetic, peripatetic lover he lived to  
learn,  
By no endeavor can magnet ever attract a Silver  
Churn!

*From the new opera, "Patience."*

### The Blake Transmitter.

Who, in these latter days of electric mental and physical light, has not seen and spoken to the Blake transmitter?

It was the legitimate offspring of the microphone. The years from 1875 to 1880, or, in point of fact, from 1875 to the present time, comprise a wonderful series of electrical and electro-mechanical successes.

The microphone, like all peculiarly great and successful inventions or discoveries, has had many would-be inventors. But the glory has been almost without question given to Professor Hughes, who certainly was the first to give to the world the knowledge of the wonderful instrument.

Less widely known, but, in the opinion of many who should be well informed, fully as well grounded, are the claims of Emile Berliner to recognition as the first microphonic inventor.

It is not our purpose, however, at the present time to decide an interference case on the respective merits of Messrs. Berliner and Hughes—and perhaps, to complete the trio, we should also say Edison, since at one period he, too, vehemently asserted his own inventorship—but only to trace the pedigree of the Blake transmitter have we opened the vexed question.

In May, 1878, Mr. Hughes gave his invention to the public and awakened anew the interest in such matters which after the introduction of the phonograph had to a certain extent become torpid.

The adaptability of the instrument to become a sender or a loud speaker for the telephone, which at this time was quietly working its way into active service, struck the practical mind of

Mr. Francis Blake, a gentleman of an inventive and experimental turn of thought. The same idea also appears to have occurred about the same time to many other minds; but to the application of Mr. Blake, assisted by several experts of the Bell Telephone Company, was the reward given.

As before mentioned, in May, 1878, was the microphone first made public, and as early as August, 1878, was the Blake transmitter produced. Its intrinsic merits at once made it a great commercial success, and at the present time about 50,000 instruments are in active operation.

We will now enter upon the method by which the Blake transmitter speaks. Many persons suppose that it is but a modification or variety of that class of battery telephones in which the oft-repeated principle is involved, namely, "the variation in resistance under pressure" possessed by many substances, and notably by carbon. It is not so, however. The only resemblance between the two types, both excellent in their place, is that both act by varying a resistance placed at some given point in a battery circuit.

Every Morse operator must have noticed repeatedly that when he has pressed his key very lightly, so as to make an uncertain contact, the relay and sounder have shown a disposition to chatter, while when pressed firmly the relay and sounder have worked firmly. This is, of course, due to the fact that when the key is lightly pressed the resistance is great between the points, while when firmly pressed the resistance is much less. The transmitter contact is precisely like this. Its work depends on the electrical properties of a bad joint; that is, upon the fact that the electrical resistance which the current experiences, in passing from one electrode to the other, varies inversely when the pressure between them varies, and upon the further discovery that they can be so mounted that the motion given by sound waves will produce corresponding variations of pressure to a useful extent without breaking contact—any absolute break of contact being fatal to the transmission of speech.

The essential operating part of the Blake transmitter lies in the contact of the two electrodes, through which the current passes. The minute movements of one of these toward and away from the other, under the influence of sound waves, causes variations of pressure which affect the strength of the current. These variations occur about 400,000 a minute, and we repeat that it is requisite that under these variations the electrodes shall not, even for the most measureless instant of time, part company.

Everybody knows what the Blake transmitter looks like; an extremely plain-looking box of the brownest of black walnut, with a lid or door opening on hinges and provided with a lock, the key of which, only on very rare occasions, succeeds in unlocking the door of any other individual transmitter. On one side of it is an inscription so loaded down with a list of patents that it is no wonder that the average lineman sets up the instrument with an inclination to that side. Not much to look at. The internal arrangements are scarcely more inviting than the outside. Screwed on to the cover is a ring of cast iron, which carries a cross bar or spring lever, to which at its upper end is attached a square block of non-conducting material. In this are inserted two springs, one of which is very light, the other comparatively heavy. At its lower end the lever is controlled by a screw. The diaphragm is insulated by a ring of rubber fixed around its edge. It is held on one side by a brass clamp and on the other by a steel spring with a little rubber glove on its end where it presses on the diaphragm. The light spring, previously referred to, carries at its lower end, which reaches to the centre of the diaphragm, a little piece of platinum, which touches the diaphragm on one side, and the middle of a button of hard gas carbon, which depends from the heavier spring on the other side. Four primitive looking binding screws may be seen inside at the top of the back of the box, and a small induction coil stands in one corner, as if it had been a bad boy. The primary or inside coil has a resistance of about  $2\frac{1}{2}$  ohms, and the secondary or outside one, which is made of fine wire, has about 250 ohms resistance. It will be noticed that here are two totally distinct circuits—first, the primary circuit from the carbon of the Leclanché battery to binding post No. 1, starting from the left side of the instrument; thence to the hinge and carbon button, through the carbon to the platinum, up the light spring to the cast-iron frame, from that to the lower hinge and to one wire of the primary coil, through that coil and out by binding screw No. 2 to the zinc of the battery. The other circuit is much simpler. The two wires of the secondary coil are connected, respectively, to the binding posts 3 and 4, which are connected in the line circuit. For example, the incoming line may be connected to screw 3 and screw 4 through the telephone to earth. In practice it is usually connected to marked screw-posts of a magneto bell.

It is rather singular that the precise reason for the employment of an induction coil in this



instrument does not seem to be generally known. It is not only because induced currents have a much greater tension, and consequently a much greater power of overcoming resistance, but also, and chiefly, because it has been found that although the range of variation at the point of contact when the diaphragm is spoken against is great and almost infinite in a short circuit, where a slight change of resistance is an important factor, it amounts to but a very small thing in a long circuit, where the external resistance is large to begin with. The induction coil overcomes this difficulty.

The resistance at the point of contact controlled by the diaphragm is constantly changing under the influence of the voice, and with each change a current in one direction or the other is propagated in the secondary coil by current induction, which current goes over the line to affect the receiving telephone at the distant end. The transmitters are always tested before they leave the shop, and unless in good order are not sent away. It may here be remarked that the light spring carrying the platinum point is called the normal pressure spring, gets other the carbon spring.

To adjust a transmitter, slack down the screw at the bottom of the level until the platinum point just touches the diaphragm, then turn upward one full turn. This will usually bring the tone to its best condition. If when you speak rather loudly at a distance of three inches from the mouthpiece it "breaks," turn it up a little more, if it be faint or muffled, turn it a little back. If the carbon is pulled backward the platinum should follow it nearly half an inch. It is a very unfortunate thing that the average inspector has a rabid desire to lay every trouble upon the transmitter. The truth is that it is a most harmless instrument and much more desirous of working properly than improperly, if it only has the slightest chance.

Inspectors of telephones, however, are much like the scriptural virgins, only instead of being evenly divided, half of them wise and half foolish, as a rule five of them are wise and forty-five foolish. The forty-five, when they visit a telephone subscriber, make it an invariable practice to do so with no oil in their lamps, and as the transmitter is a convenient instrument, it is generally credited with the trouble; and, moreover, as it is quicker and easier to take it out and put a new one in than to discover and fix the trouble, that is the procedure usually adopted.

The following are troubles likely to arise in the transmitter, with their remedies.

Trouble in secondary coil. This shows by appearing as if the whole arrangement had given out. Neither speaking or listening can be accomplished.

Examine the binding posts 3 and 4 and the fine silk covered wire leading to those posts from the coil. If you discover the fault, common sense will tell you how to fix it. If you don't find it, disconnect the outside wires from the binding screws and twist them together, then talk and listen with the telephone alone. If you succeed in doing so, it proves the trouble to be in the secondary coil. A dead certainty may be given to this test by now connecting binding screw 3 to one pole of the battery, the other pole of the battery to one wire of the telephone cord, attach a long wire to the other wire of the telephone cord, then touch screw post 4. If you hear a click, you have made a mistake and the trouble is not in the transmitter but in the call box. If not, touch at different points along the silk covered wires, first baring them a little. If the trouble is thus discovered, you can probably splice it; if not, the trouble is in the coil and the coil must be changed.

Trouble in primary circuits shows by the listening coming all right, while the transmitter will not say anything.

It may be caused by several different things; screw post loose, either No. 1 or 2; wire in primary coil broken; loose connection on the primary circuit, where it goes through the call box; the platinum point does not touch the carbon; the small spring may touch the large one above the contact point; the battery may be weak or otherwise out of order. These faults may be mostly found by inspection.

Remedies for the first, screw them up. Second, test for break with battery and long wire if everything else fails. If the break proves to be inside the coil, the coil, as before, must be

changed. Third, examine all the connections in the call box. Fourth, screw up the adjustment until the platinum does touch the carbon, then adjust according to rule previously given. Fifth, gently bend the springs until they come to their proper position.

If the battery be weak, it may be detected by placing the telephone to the ear, after carefully examining every connection, and then gently drawing the carbon from the platinum. If the click at breaking and closing is not loud and strong, the battery is probably out of order and must be looked to. A good inspector will assure himself of that fact by an examination of the battery first thing.

Sometimes the talking will become weak after a few days of warm weather. This would be likely caused by the rubber glove on the end of the damping spring becoming soft.

Remedy—Insert between the rubber and the diaphragm a thin piece of silk, cloth or paper.

Occasionally the transmitter makes a continual humming noise. This may be caused by the adjustment being too low, or by the battery being too strong. In the first case, screw it up a shade. In the second, press the diaphragm through the mouth piece, to stop it temporarily, and either wait with patience till the battery gets a little older, or for the time insert two or three ohms resistance in the battery circuit.

If the tone from being good, becomes weak, and at the same time harsh and raspy, it is caused by the platinum wearing the surface of the carbon rough at the point of contact.

Remedy—Carefully unscrew the carbon and rub it on fine emery paper until the polish is once more even and good. Finally, as in all electrical apparatus, when a transmitter is working well, leave it alone.

#### Union of the Telegraph and Postal Services.

This subject is discussed by a Mr. A. B. Huet in the July number of the *Popular Science Monthly*. The arguments in favor of a government monopoly of the telegraphs are similar to those put forward by other writers on the same theme.

In determining the question as to whether the United States should constitute this means of communication a part of the general postal system, Mr. Huet says the first important consideration is, whether such action is authorized by the Constitution; secondly, whether such control has proved a success in the several countries where it is thus organized; and, finally, whether a beneficial result is likely to follow from similar action in this country.

As to the first proposition, he continues, there can be no doubt. That clause of the Constitution wherein this authority is granted is found in section 8 of Article I. in this language: "Congress shall have power . . . to establish post-offices and post-roads." By this comprehensive and explicit declaration, the framers of the Constitution, without doubt, intended to lodge with the general government the exclusive privilege of regulating and conducting the transmission of intelligence among its citizens—in other words, the intent was to give to the general government the exclusive monopoly of the postal service, by which was meant the interchange of intelligence, not only by the methods then in use, but also by the use of improved methods thereafter devised and adopted. This opinion is sustained by the decision of the Supreme Court in the case of *The Pensacola Telegraph Company vs. The Western Union Telegraph Company* (6 Otto), in which the Court says: "Post-offices and post-roads are established to facilitate the transmission of intelligence. Both commerce and the postal service are placed within the power of Congress, because, being national in their operation, they should be under the protecting care of the national government." That these views are sound is too plain to be doubted. Continuing, however, the Court touches upon the very point in question—the telegraph: "The powers thus granted are not confined to the instrumentalities of commerce, or of the postal

service; known or in use when the Constitution was adopted; but they keep pace with the progress of the country, and adapt themselves to the new developments of time and circumstances. They extend from the horse with its rider to the stage-coach, from the sailing-vessel to the steam-boat, from the coach and steamboat to the railroad, and from the railroad to the telegraph, as these new agencies are successively brought into use to meet the demands of increasing population and wealth. They were intended for the government business to which they relate, at all times and under all circumstances." It was impossible for the men who framed the Constitution to foresee the wonderful improvements in the means of rapid intercommunication which have since taken place. At that time there were only a few post-roads in the United States, and over these the mails were conveyed on horseback or in the stage-coach, consuming a fortnight in the trip from Boston to Philadelphia, that is now made by the fast mail in a few hours. In the progress of events, the people demanded a quicker means of communication, and the government did not hesitate to place the mails upon the railroads as fast as they were constructed. Now, in many instances, the railroads are too slow to meet the demands of business communication, and the telegraph is freely used in all important commercial transactions. The business man who does not use the telegraph each day for information as to markets abroad, to make contracts with distant customers, to transmit money, and in various other ways, is counted slow indeed in this age of progress. From these facts, is there not the more reason for making this wonderful and powerful agency subservient to the general postal system of this great and growing country than there was for providing for the carriage of the mails by steam?

Further, it is not only a constitutional privilege, but it is also a constitutional duty; and it is susceptible of the strongest proof that, in neglecting to make the telegraph a part of the postal system, the government has failed of its constitutional duty toward its citizens. Such powers as are granted to the general government are granted absolutely, and are lodged nowhere else. In the language of the tenth amendment, "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." It may not be improper to observe here that only such powers were granted to the general government as could not properly be exercised by the States. For instance, the right to declare war was granted to the general government, and wisely, else New York might declare war against some foreign power, while the remaining States might be strongly in favor of peace. It is, therefore, fair to infer that such powers as were granted to the general government were not "reserved to the States respectively, or to the people;" and in this class, as we have seen, is the power to regulate and control the transmission of intelligence. In the language of Mr. Justice Field, in *ex parte Jackson* (6 Otto), "The power possessed by Congress embraces the regulation of the entire postal system of the country." It extends to the telegraph as well as to the railroad, and the conveyance of letters and packets by regular trips over railroads by private parties is prohibited by law (Revised Statutes, sections 3,982, 3,983), yet we permit a private monopoly to convey our messages the quicker way by telegraph. The government enforces a monopoly of the transmission of intelligence by the slower methods, but when the lightning is invoked that is left to the monopoly of a single private corporation, contrary to the true intent of the Constitution.

The postal telegraph system has been adopted in Belgium, Switzerland, France, Russia, Germany, Sweden, Italy, New Zealand, and other countries, with the most gratifying results in each case. Great Britain, usually so quick to adopt reforms in the postal service, and to which government we are indebted for various improvements in our service—the postage-stamp, money-order, postal-car, carrier-system, postal-card, etc.—was the last of the European countries to establish the system. Previous to its introduction there, the Chambers of Commerce memorialized Parliament in favor of the measure, alleging that they "had reason to complain not



only of the high rates charged by existing companies for the transmission of messages, of frequent and vexatious delays in the delivery, and of the inaccurate rendering, but that many important towns, and even whole districts, are unsupplied with the means of telegraph communication." In moving leave to introduce the postal telegraph bill, the Chancellor of the Exchequer said: "We were in the habit in this country of leaving to private enterprise the administration of internal affairs, the exception to the rule being that of postal communication. With the consent and approbation of the country, this was a monopoly in the hands of the government; and he submitted that telegraphic communication and postal communication might be considered as coming within the same category, as both provided for correspondence between persons at a distance, and the only difference was the mode of communication. It would be admitted, as a general principle, that the monopoly which had succeeded so well in regard to the conveyance of letters might be expected to succeed equally as well in a more rapid method of communication. He was not aware of monopoly in the one case which would not hold good in the other." The reasoning of the distinguished chancellor applies with greater force to this country, where the rates are higher than they were at that time in Great Britain, and where the entire telegraph system is in the hands of a single private corporation. The transfer of the telegraph business to the government in Great Britain took place February 5, 1870, and in 1872 there was a net revenue from this source of £159,835, which increased in succeeding years.

In conclusion, Mr. Huet thinks that there is no reason to doubt that the success which has attended the system in other countries would obtain in the United States, especially when we consider the energy and enterprise of our countrymen, and the extent and resources of our great and rapidly developing country; and that with a uniform tariff, say of twenty cents for twenty words or less, it could be made in a few years to cover all expense, if not (which is probable) a source of revenue to the government. That the near future will witness this realization, Mr. Huet adds, is quite certain.

#### Telegraphy as a Specialty.

Among the useful arts there is none at the present hour of wider application or more beneficent in results than telegraphy. It has already become a prime factor—a necessity—in the commercial, social, literary, political and moral departments of human life. And its birth and development have been so sudden—so like the descent of a beneficent spirit to earth from the celestial realm, that the human mind has not yet adequately realized and appreciated the supreme benefits that directly and secondarily result from its advent. For it has not only entered and permeated as a recognized necessity every relation subsisting between individuals and nations in every department of human existence, but it has compelled the organization of a new school of specialists, by which its processes and requirements are executed.

There is no occupation in the whole range of civilization demanding a more intense mental tension, greater precision, greater aptitude in rapid execution, with an ever present consciousness of great responsibility, than that which falls to the lot of the telegraph operator. An error in the transmission of a single message may wreck a lightning express with its precious freight, or commercially uproot a fortune; and there are but few individuals that can bear this great mental burden for any considerable length of time without giving way, in a greater or less degree, to the pressure. We believe the brain and nerve waste in the system of the telegraph operator is greater in proportion, in a given number of hours, than in any department of scholastic or professional life. And this waste

must be promptly repaired by proper nutrition or food, or the most deplorable results will follow.

Already thousands of victims have fallen; their place being eagerly sought for and filled by youthful aspirants unconscious of danger. In any department of human endeavor a sedentary life, joined to severe mental tension and a sense of great responsibility, is full of peril to the physical system. In such a case the brain and nerves are not only sure of being overtaxed, but for want of proper exercise the natural equilibrium is destroyed between the muscular tissue and the nervous systems. In such a case the victim loses his appetite, the tissues of his body waste, and his mind becomes morbid, irritable, fretful and gloomy. Often the diet of such an individual, if he indulges too freely in carbonaceous and nitrogenous food, increases the difficulty. The telegraph operator must have pure air, proper physical exercise, and an abundance of brain and nerve-sustaining food, if he would escape the evils to which his daily task expose him. Already a specialist in dietary science has elaborated a Food Cure System admirably adapted to meet the wants of an overtaxed mind and body. That thousands of physicians find in the brain and nerve-sustaining power of the Blanchard Foods an efficient means to sustain and repair the broken down mental and physical energy of their patients, is a sufficient guarantee of their merit and value. Thus it is that as soon as a new departure in science creates a new want, science in another department exhibits her infinite resources in its prompt fulfillment.

#### Recent Advances in Electric Lighting.

BY W. H. PREECE.

Advances have been made, not so much in electric lighting itself as in the popular favor with which it is regarded. The public is becoming more accustomed to its use, and is acquiring more confidence in it. The result of trials during the last year or two has been to make the defects of the electric light better known. It has been taken out of the experimental stage, and brought within reach of the practical stage. The principal fact which has brought the electric light to the front has been the substitution of machinery for the direct conversion of mechanical energy into electricity for the expensive batteries which were the only sources a few years ago. Machines, working with high velocity, great steadiness, and uniform pressure, have solved the problem of cheap electricity. The amount of coal required to produce one horse-power has been reduced from seven and eight pounds to three and even two pounds. The gas-engine—a very economical source of energy—has been successfully applied to electric lighting in many places. Such an engine has been used at the docks in Newport, South Wales, to produce a light of eleven times the power that the same gas would give if used directly. Here is a sphere in which gas companies may maintain their dividends. Water furnishes a convenient source of energy wherever it can be found available. Sir William Armstrong makes his brook light his house, producing from it, by the aid of a turbine, a force giving six horse-power. The caloric engine at the Lizard lighthouse has been found to be economical, useful, and very suitable for an isolated place where it is hard to provide water.

The forms of arc-lamps are very numerous. In every case carbon rods are opposed to each other, and are disintegrated and consumed in the fierce blast to which they are subjected. The lower pole—the negative—acquires a temperature of

3,150° C. (5,702° Fahr.), and is broken up and fired in a fierce bombardment of white-hot molecules across the air against the upper pole—the positive—which is beaten up by incessant impacts into a higher temperature of 3,900° C. (7,052° Fahr.), the arc itself being 4,800° C. (8,672° Fahr.). A number of ingenious appliances have been adopted to obtain steadiness and uniformity in the action of the arc, which is liable to variations arising from the irregularity in the character and consequently in the consumption of the carbon, and from variations in the strength of the current. We want brilliancy combined with absolute steadiness, and a durability equal to the length of a winter's night. All the improvements that have been made in the arc have not given a silent and steady light.

The incandescent light is free from many of the defects of the arc-light. In it we have something that is beautifully soft, absolutely noiseless—a light that brightens up nature in all her true colors and purity. It, however, requires considerable expenditure of power, and is at present an expensive luxury. Sir William Armstrong finds that six horse-power will supply thirty-seven lights, giving altogether the illumination of nine hundred and twenty-five candles. The same power applied to arc-lights would give more than six thousand candles. But rapid progress has been made in this field. Maxim, Edison, etc., in America—Swan, Lane-Fox, and others, in England—are working hard; while Gordon and Joel are working in an intermediate field, in which a prospect appears of a happy compromise being effected between the arc and incandescence.

Some wild statements, involving wonderfully divergent estimates, have been made about the light-giving power of the different lights. A standard sperm-candle, although it may be a good unit to measure gas by, is a very poor standard for the electric light. None of the various modes of measurement in use seem to apply exactly to this light, and the standard of measurement of the future has yet to be found. Much is said about the subdivision of the electric light by certain gentlemen, who hope to distribute it throughout our houses from one central spot, and furnish it cheaply and abundantly in our cities. I am one of those who do not believe in the impossible, but I say that, with our present knowledge, this problem is unsolvable. Sir William Armstrong can only keep thirty-seven lamps going; Lane-Fox could only show twelve lights; Professor Adams could only produce from the most powerful dynamo-electric machine, by calculation, one hundred and forty lamps. Where is the subdivision? The advocates of subdivision assume an inexhaustible source of electricity. Their opponents reply that there is but a very limited source of energy in every dynamo-electric machine. It may be that more powerful machines and lamps of lower resistance may enable us to light up a greater number on one circuit, but this is not subdivision, it is multiplication.

Nearly three hundred Gramme machines are in use in England generating light; there are many more Siemens machines, and the Brush people have installed many machines and lights. Nearly all the ironclads in the navy are supplied with the electric light. In libraries, while reading by gaslight is irksome, reading by the electric light is simply delightful. Railway stations are gradually adopting the lights; seaside resorts are illuminating their parades with them. It would be impossible to make any summary of the numerous manufacturing establishments that have been supplied with lights worked successfully.

Notwithstanding these great advances in its use, it must not be forgotten that the electric light has its defects and its advantages. The intense shadows that it occasions are troublesome. The unsteadiness of the light is at times wearisome. The hissing which impurities in the carbon and irregularities in the current produce is tantalizing, and the light has an unfortunate habit of misbehaving itself when it is most wanted. Moreover, the problem of durability remains yet to be solved. Many have tried the light and abandoned it. In some cases its economy is unquestionable, but there are places where careful persons have shown that gas, as regards economy, surpasses it. It is questionable whether, in some cases, the electric light does not affect the eye. The arc-light produces, also, nitrous acid and



other deleterious gases, but the incandescent lamp is free from this trouble. The powerful currents that it requires can not be carried over buildings and rooms without incurring danger from fire and to life. Nevertheless, the light has great and manifold advantages. The brilliancy of a well-lighted room is simply enchanting. The purity of the light for the transaction of business, the selection of colors, and the ordinary daily avocations of life, is simply superb. Its cleanliness is one of its great merits.

#### Another Decision for the Western Union.

On Friday, July 8, Judge Blatchford, of the United States Circuit Court, handed down a decision in the case of the French Cable Company against the Western Union, American Union, Atlantic & Pacific and the other telegraph companies, asking the Court to invalidate the agreement of consolidation made December 18, 1880, on a re-amended bill of complaint, in which he says:

I cannot regard it as an open or a doubtful question that the consolidation agreement was valid, whether considered with reference to the general principles applicable to it or to the statute of New York, or to the act of Congress. But it is contended for the plaintiff that that agreement is in violation of the rights which the plaintiff has under the contract between it and the American Union Company. There is nothing before the Court to enable it to measure with the least approach to accuracy, or otherwise than by the merest fancy or conjecture, the extent or the pecuniary value of those rights which extend at most only to unconsignéd messages, or the pecuniary amount of any damages, either past or probable in the future, from the violation of these rights. On the other hand, it distinctly appears that the controlling reason operating with the American Union Company in selling its property was the great disadvantage in pecuniary results of continuing its business as an independent company in comparison with the advantage to its shareholders of becoming such in the Western Union Company. When to this is added the fact that by the pooling or joint purse arrangement existing between the plaintiff and the other two cable companies it makes no pecuniary difference to the plaintiff whether all messages are sent over the plaintiff's cables, or whether all are sent over the cables of one or both of the other two cable companies, it is plain that the injury to result to the American Union Company from preventing the carrying out of the consolidation agreement is far greater than any possible injury to result to the plaintiff from a contrary course, and that therefore the case is not one for equitable interference in that regard.

If hereafter damage is shown to result to the plaintiff from sending by the Western Union Company of unconsignéd messages over some cable other than a cable of the plaintiff, it may be proper to ask the interference of a Court of Equity. In such case the question whether the agreements between the French Cable Company and the American Union belong to a class of which specific performance will be decreed and the question whether the remedy at hand is complete, adequate and plain, and the further one as to what control the Court would have over the plaintiff to compel it to observe the agreement on its part, will come up for consideration. The motion for an injunction to prevent the carrying out of the agreement of consolidation is therefore denied.

#### The New York Wire Club.

The gray sky wears again its gold  
And purple of adorning,  
And manhood's noonday shadows hold  
The dews of boyhood's morning.

President Borst called the meeting to order, and announced that Professor Weller would play a few symphonies on the organ while the regular collection was being taken up by Gilley Olmstead and Denis Brown, of the committee on finance.

Mr. Weller's execution of Mozart's weird music produced a startling effect upon the audience, which vented its delight in loud and repeated

cheering from the body of the house, while the overcrowded galleries sent forth hoarse shrieks of approval, completely drowning the minor passages of the piece. Mr. Weller's marvelous fingering, however, could be seen if not heard, and the whole performance was heartily enjoyed by an audience that kept excellent time with its feet.

At the conclusion of the grand finale, in which Mr. Weller introduced his imitation of a milk wagon thundering over Paterson Bridge, the house rose and sent up a deafening volley of cheers.

Walter Richmond inquired if any one had seen the score of the last walking match, and proceeded to relate many incidents connected with recent sporting events. Time was called at the end of the allotted ten minutes, but Mr. Richmond refused to yield the floor. Confusion reigned supreme for some time, Mr. Richmond finally giving way with the remark that he was "more chinned against than chinning."

Mr. George Walcott volunteered to sing, if unanimous consent could be obtained; but great opposition was manifested by the faction controlled by the Half-breed leader, Giles N. Howlett, who made a vigorous speech denouncing the Stalwarts.

Mr. Howlett's peroration was exceedingly fine, and brought tears to the eyes of all.

Notwithstanding the Half-breed opposition, President Borst, in direct contravention of parliamentary rules, decided that, as he was in a musical mood, he would either hear Mr. Walcott's song or adjourn the meeting. Much discontent was expressed at this arbitrary ruling, and Gisborn Ward threatened to draw up articles of impeachment against the President.

Mr. Walcott then sang "Dame Margery" in such a manner that pen and ink would fail to do justice to the effort.

A ballot for Secretary was taken with the following result: Giles Nero Howlett (Ohio), 278; Gisborn Ward (Newfoundland), 222; John Lenhart (New York), 1.

Mr. Howlett was declared elected.

The next meeting was called for Aug. 1. Mr. Howlett will talk and Mr. Walcott will sing.

#### An Important Suggestion.

Professor John Trowbridge has suggested to the government that the universities along the Atlantic coast, from Boston to Baltimore, should co-operate with the signal Service in establishing stations to observe the electrical state of the air. He says: "Very little is known in regard to the electrical state of the atmosphere; and no systematic observations of it are taken in America. It is well known that northwest winds along our northern coast are usually accompanied by a positive charge of the atmosphere, and east winds by a negative charge, or the absence of any appreciable charge. The coming of these winds can be predicted to a certain extent by observations on the electricity of the air. The approach of thunderstorms is also heralded in a clear sky by the delicate instruments which have been lately constructed. Since our knowledge of meteorological phenomena depends upon simultaneous observations extended over large areas, a number of stations for observing the electrical state of the air should be established in connection with the Signal Service. By a simple plan of co-operation with the Signal Service, Harvard University, Yale, Columbia and Princeton colleges, the University of Pennsylvania, and the Johns Hopkins University could enable the United States Government to try the experiment. These institutions form a cordon of nearly a thousand miles along the Atlantic coast where commerce is most active.

Chief Signal Officer Hazen has replied that the Signal Service would very willingly work in accord with the scientific men on the Atlantic seaboard in undertaking the experiments proposed, if the universities should take concerted action and ask the government's co-operation.

An omnibus run by electricity is announced to ply between Zehlendorf and Teltow at Berlin. The vehicle is similar to a four-wheeled bus, with room for ten people.

#### Answers to Correspondents.

If two wires, one connected with a battery, be moved, will the induced current in the secondary wire continue to flow as long as the wires are moving, or is it instantaneous on the starting and stopping of motion, the same as if the battery circuit were interrupted?

A. D. A.

The induced current is caused by any change in the relative position of the two wires. It follows, then, that the current will exist in the secondary wire as long as the inducing wire is being moved either nearer to or further away from it when they are sufficiently near each other to be inductively influenced.

I work two cells of Callaud battery on my local. When main line is cut out, and with a certain adjustment of the relay, its tongue will begin to vibrate, and thus open and close the local circuit, and continue until the adjustment is changed or main line cut in. Please explain the cause through the columns of THE OPERATOR.

L. A. R.

This will occur when a relay is adjusted very low, and when there is very little tension on the spring. With such an adjustment, when the main line is cut in, the magnet holds the armature firmly up; but as soon as the cut-out is put in, the attraction of the relay ceases, and the very slight tension of the spring pulls back the armature tongue. The tension, however, is so very slight that the armature is not permanently retained, and, being almost perfectly balanced, it vibrates on its centres in the manner indicated.

Would you kindly inform me in the next issue of your paper how I am to proceed in order that I may join the Military Telegraph service? I have about seven years experience as operator both in this country and in England, but always had a very strong desire to join the military service. I read about 25 words Morse and am a steady, sober sort of fellow. You may, perhaps, wonder why I do not remain where I am, for I am with the W. U., but they are beginning to get things down to so mean a point since the consolidation that I am heartily sick of the whole business.

E. H.

Operators now in the U. S. Military Telegraph service do not recommend the same very highly. Your post of duty would in all probability be away out on the frontier some place, where, if you are fond of solitude, you could indulge your fancy in that direction to an unlimited extent. By writing to the chief signal officer, U. S. A., Washington, D. C., you can get all the information you may need in reference to joining the service, rates of pay, chances of promotion and the like.

#### Simplification of Telegraphy.

A device has been perfected by H. M. Albee, of West Oakland, by which any one who knows the alphabet and how to spell can correctly transmit telegraphic dispatches. The invention is a substitute for the key, which requires training in order to be used. It consists of a piece of metal in which are inserted conductors of brass and non-conductors of whalebone to correspond with the characters of the Morse alphabet. Each letter or numeral is divided off and marked. By moving a metallic pencil over any one of these divisions, the particular letter or figure is reproduced at the other end of the line by means of the insulations and connections. One stroke suffices for a character, while greater precision is obtained than by the key, as on account of the mathematical accuracy of Mr. Albee's device letters or numbers cannot be run together as now too frequently occurs. The invention was tried yesterday between Oakland and Sacramento, and, considering the briefness of the test, gave satisfaction.—*San Francisco, Cal., Chronicle.*

Mr. E. Clemons Hoagland, formerly with the A. U., at Chicago, is a recent addition to the Binghamton, N. Y., W. U. force.



## Notes and Queries on Electricity and Electro-Magnetism and Their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 140. Describe some of the best or most generally employed insulators?

A. The unprotected glass insulator, which is in almost universal use in this country, naturally takes precedence with an American writer.

Though perhaps not so perfect an insulator in many respects as some others, its low price, more than fair insulating properties and easiness of attachment, enable it to maintain its place in the front rank.

As made now, it has a screw thread on the inside, by which it is secured to the bracket or pin. The under side below the screw swells out, and the concavity thus formed keeps always a certain amount of dry surface and prevents an escape in wet weather. The line wire is passed alongside the groove surrounding the insulator near the top, and is fastened with a tie wire, which passes around the insulator, while both of its ends are twisted around the line wire.

The glass insulator with an iron covering is used to some little extent in the United States. It has no particular features, except those indicated by its name. It is to be objected to chiefly because when an insulator becomes defective it is a very difficult matter to discover the defect; and, moreover, it has been ascertained that when such insulators are used the percentage of leakage is comparatively high.

Next comes the brown earthenware insulator, which is in general use in England. It is composed of two separate cups, the smaller of which is fitted into the larger, and is fastened by a cement consisting of equal parts of fine sand, cement, and plaster of Paris. The iron bolt is galvanized, and is fixed in the inner cup by another cement, which is invariably composed of 5 parts of clean sand, 3 parts ashes from a locomotive fire-box, and 2 parts pine resin. A groove is on the upper part of the insulator, and in this the line wire is bound, in a manner similar to the glass insulator.

It may be well here to state that sulphur is not a good insulator cement, as it splits the insulator, apparently by expansion.

The Brooks insulator is in many respects an excellent one, and gives very satisfactory results, especially in localities where insects are scarce. It consists literally of an iron wire-holding hook, cemented into a blown glass bottle, which is inverted, so that the hook hangs down. The bottle is cemented into a cast-iron shell, which is either provided with an arm that screws into the pole, or, if to be placed on a cross-arm, is arranged with a projecting piece, whereby it may be inserted into a hole on the under side of the cross-arm, and locked by a pin which is passed through the cross-arm and engages the projecting piece.

The remarkable insulating properties of this combination are due to two causes; first, the liberal use of paraffine, with which the cement is saturated and, second, the great power of repelling moisture which blown glass has.

The last insulator which it is necessary to mention is the "rubber hook." It is simply an iron hook whose shank is firmly fixed into a mass of hard rubber. A thread is cut on the rubber for screwing into cross-arms.

On account of its great mechanical strength and convenient form, it is much used on short city lines. Its high price and the deterioration of its insulating qualities after a few years use prohibit its use on long lines.

Q. 141. What is usually the material of the conductor in aerial lines?

A. The material of which aerial conductors are made is now almost universally iron. The best wire is made of charcoal iron, which, after being drawn, possesses a high degree of tough-

ness. Line wire should invariably be galvanized. Iron is selected as the best conductor because it is cheap, durable, has a reasonably low resistance to the passage of electricity and has great tensile strength. Copper, on the other hand, cannot be ordinarily used, because it only has one of the above qualifications in a superior degree to iron, that is, "low resistance." In that it is much superior, a wire of copper conducting as well as a wire of iron six times its cross section. For this reason it is exclusively used in submarine cables. Its disadvantages for land lines are its intrinsic value, which renders it at all times liable to be cut down and stolen; its low degree of tensile strength and its extreme sensitiveness to changes of temperature. It has been often tried, but always given up. Compound wire has sometimes been used and has had some degree of success. It has a steel core, with a copper sheathing, so as to combine strength with conductivity. When the copper is worn off, however, which soon takes place, the conductivity is much diminished.

Light steel wires are more or less coming into use for short telephone lines, where a high degree of conductivity is not necessary; and their advantages are that considerable strength is thereby acquired, that much lighter fixtures may be used, and that householders are much more willing to allow a light wire than a heavy one to be attached to their houses.

Q. 142. What sizes and brands of wire are chiefly employed?

A. For telegraph lines of medium length, for example, one hundred to three hundred miles wire of number 8 or 9 Birmingham gauge is generally employed. The size of No. 8 is .165 of an inch, its weight per mile about 385 pounds and its resistance nearly 13 ohms per mile; while 409 feet measure 1 ohm in resistance.

The size of No. 9 is about .148 of an inch, its weight per mile about 324 pounds, its resistance per mile 16 ohms and one-tenth, and 328 feet of it make a resistance of 1 ohm.

For very long lines—for example, from New York to St. Louis or Chicago—Nos. 4 and 6 are used. The size of No. 4 is .238 of an inch, and of No. 6 .203 of an inch. The weight of No. 4 is about 887 pounds to the mile, and of No. 6 about 570 pounds. The resistance per mile of No. 4 is about  $5\frac{1}{2}$  ohms, that of No. 6 about  $8\frac{1}{2}$  ohms.

For lines but a few miles long—in short, for any line less than 25 miles in length—Nos. 10 and 11 will answer very well, while for very short city lines, employed either as telegraph or telephone wires, Nos. 12 and 14 are as large as necessary.

Their sizes and resistances vary as follows: The size of No. 10 in mils. or thousandths of an inch is .134, No. 11 is .120, No. 12 is .109 and No. 14 is 83.

Their respective weights per mile are 249, 200, 165 and 95 pounds. And their respective resistances  $19\frac{1}{2}$ ,  $24\frac{1}{2}$ ,  $29\frac{1}{2}$  and 51 ohms per mile. These figures are approximately correct. They are necessarily modified, however, in each individual case by the different gauges in use by different manufacturers.

The best brand of wire for telegraphic purposes is undoubtedly charcoal wire. It is now more used in France than anywhere else. "Extra-Best-Best," known commercially by the cabalistic symbols E. B. B., is generally used in this country, and is a first-class quality of wire.

Q. 143. What mechanical tests are usually applied to telegraph wire?

A. Only two tests are generally applied in America to line wire; those for ductility and tensile strength. The first is made by twisting pieces of wire between two vises; the second by direct appliance of weight. Two other tests are desirable and easily applied.

As the value of these tests depends mainly upon the way they are applied, we will describe the four methods somewhat in detail.

The first mechanical test which should be applied is so simple as to be in the hands of every one and is for pliability.

The wire should be capable of being bent four times to a right angle with itself, while held in a vise, without injury.

The second test is to the same end and is equally easy of application. The wire should be capable of being wound around itself a certain number of times without breaking.

The third test is universally employed, both by the Western Union Company in this country and

by the telegraph departments in the principal European countries, and, as previously indicated, if well performed this test is valuable; if performed in a slovenly manner it counts for nothing.

It is to subject a sample of the given wire to twisting and also is a test for ductility. The piece of wire is placed between two vises six inches apart, and twisted; the greater the number of twists that it will bear without splitting or breaking, the better is the ductility of the wire.

The twists are reckoned by the spiral formed by a line drawn along the wire with ink before the test. The number of the twists in wire of the same quality depends upon the size of the wire. For No. 9 it should not fall below 15 twists in the six inches, or for No. 12 below 17. To give the test a proper degree of value, the vise jaws should not have sharp edges, or they will cut the wire and cause it to break close to the vise. The number of twists that any wire should bear varies (roughly) inversely with its diameter. That is, the number of twists that a wire will stand increases in the same proportion as its diameter decreases.

The fourth test is for tensile strength. The wire is required to carry a certain weight or resist a certain strain without breaking.

This test is universal in its application. The requirement of the Western Union Company is that the wire must be capable of elongating 15 per cent. without breaking, and that it must not break under a less strain than two and a half times its own weight per mile.

This test is sometimes made with a hydraulic machine, but oftener with a scale and weights. The last method is much to be preferred, because in the former the additional strain is apt to be too rapidly applied, and the wire, not having time to stretch to the individual strain, will show a greater strength than it has. Using a scale or lever, the weights should be slowly applied and the wire given time to stretch. If the wire to be tested is to be suspended from a hook, it will not do to fasten it with a twist splice, as such a splice will not stand the strain. The wire should be closely wound around the hook and the end brought down parallel to the wire, the two being then closely wrapped with binding wire.

T. D. L.

### Telephone Cables in San Francisco.

Nearly two years ago, after Superintendent Sabin's return from an Eastern tour of inspection, the Pacific Bell Telephone Company commenced using one-inch aerial cables containing 40 No. 20 copper wires, for the purpose of entering their central offices from the roof.

Gradually the length of these cables was extended, and now the main office has seven of them, extending from the tower on the roof of the office to various points. The lengths of cable vary from 100 to 600 feet. This distance was found to be about the limit ordinary cable wires can be used, bound together in one cable, without their interfering with one another from induced currents.

When Mr. Sabin was East this spring, he found San Francisco was far ahead in the use of aerial cables, only one or two large cities using them, and they had only patent anti-induction cables, so heavy and expensively made as almost to make their use prohibitory. San Francisco has 7,500 feet of this 40-wire cable in use, occupying the space of the same number of feet of ordinary wire, but actually representing 57 miles of telephone line, free from all danger of "crosses" and "grounds."

One thousand feet of this cable has just been put in slings on the California street poles. By cutting the cables every 300 feet and cross-connecting the wires, thus changing their relative positions in each section, the trouble from induction has been satisfactorily overcome. Two more sections of 300 feet each are to be added to this cable. The cable used is manufactured by Eugene F. Phillips, of Providence, R. I.—*San Francisco Bulletin*.

The *Detroit Free Press* says: Here was a President of the United States shot. Within a few minutes the fact and all the details of it were known to the remotest corners of the world. Adams and Jefferson died July 4, 1826, and months elapsed before the news reached the confines of the country.





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### THE PARIS EXHIBITION.

For the first time in the history of the world the branch of science dealing exclusively with electricity is to have an international exhibition, which will open a fortnight hence, at the Palais l'Industrie, Paris. The French Government has already appropriated 300,000 francs toward this object, and other French parties have guaranteed any possible extra expense, while the generous responses from all civilized nations—particularly America and England—have foreshadowed for it an immense success. The surplus, if any, is to be devoted to scientific purposes. It is proposed to show the practical application and theory of electricity in all its branches, and to bring together the most renowned electricians of the world.

The rapid growth of the telegraph during the past 25 years seems to be too enormous to realize, even now, when we know that half a million miles of wire is employed by the telegraph companies alone; but at this exhibition it is proposed to show in detail its origin, wonderful progress and still more marvelous possibilities, and to prefigure its usefulness in the near future. This, then, will give us a most interesting exhibition—telegraphs, telephones, phonographs, photophones, microphones, electric lights, electric railroads and electric pens—everything in connection with the science that is romantic as well as practicable. In fact, in Paris next month the "Arabian Nights" are to run riot. The visitor will be carried to the exhibition by an elevated electric railway. By day, a whole army of telegraphers and other electricians will be at work. The exhibit of the French Government will include specimens of all its electrical and telegraphic appliances, both for ordinary use and military purposes. The great railroad companies will exhibit their methods of starting and stopping trains by electricity, their electric brakes, and their method of electrically registering the speed of trains, the traction, the force of the wind, the expenditure of steam and so forth. In the nave of the edifice will be a small lake or basin in which will be floating a miniature steamboat laying submarine cables. In an adjoining room the manufacture of these cables will be seen in operation. In a nursery dolls will march about, magic lanterns shine and many playthings move by electricity. According to one French journalist, of more or less veracity, there will be electric chairs that give an electrical reminder to bores who would otherwise never take leave of their hosts, while an ingenious contrivance, which may yet become widely popular, will give a smart electric shock

to peddlers, book agents and tramps generally, if they pull the door-bell a second time.

M. Berger has constructed two salons for telephonic recitations. In one the visitor will be able to drop into an arm-chair and listen to what is being sung at the opera. To the other a wire from the Théâtre Français will convey the accents of Mlle. Croizette and others, while neighboring telephones will enable the visitor to converse with Lyons, Dijon, Orleans and Tours.

By night the scene will be illuminated by thousands of electric lights, in which the Jablochhoff, Jamin, Werdermann, Siemens, Gramme, Lontin, Noaillon, Merteas, Suisse, Wilde, Brush, Swan, Edison, Maxim, Arnaud, Crompton, Brockie and every other system will be represented in friendly competition, some in simple globes and others aided by the reflectors of Ballestrieri's system. These lights will illuminate the exhibition building and vicinity in quite a magical manner until midnight, and above all will tower an immense light-house, lighted with 600 electric lamps fed by one large electromagnetic rotary machine of 850 horse-power.

But the greatest curiosity of all will be a series of rooms in which all the operations of the household will be conducted by electricity, showing what our houses will be when that subtle agency has become an ordinary domestic appliance. The rooms will be illuminated by electric lamps, any one of which can be lighted at will by pressing a button or simply opening the door. In the kitchen steaks will be literally broiled by lightning and coffee warmed by the aurora borealis. The heat for cooking will be furnished by electric currents passing through water; half-a-dozen cooks will prepare waffles à l'électricité; metallic plates warmed by electricity will keep them hot, while an electrical dumbwaiter carries them to the dining-room. Orders to the servants will be transmitted by telephone. In the parlor clocks will run by electricity. In the billiard room the players' count will be accurately recorded by an electric indicator. There will be an electric piano in the music-room and electric hair-brushes in the sleeping chambers. It will be shown, in fact, that the same wire which knits the continents together and makes all nations neighbors can also be used to light, heat and cook, as well as to drive the coffee mill and the sewing machine.

There will be also what is called a retrospective collection of apparatus, concerning the first experiences and oldest applications of electricity, and also a library of works on the science as applied to industry.

It is proper that this great gathering of scientists—the first we hope of many such meetings—should be held on the soil of France. That great country is ever second to none in encouraging the arts and science, and if there be anything which exceeds the renown of her many victories in war it is the steadily increasing glory of her victories in peace. In this La Belle France fitly typifies Electricity itself—that mighty force "which will waft the gentlest whisper or fuse the hardest metal."

America should take especial pride in making a good showing at this exhibition, for in no other country has the development of the telegraph received less aid from the government. Here it is purely an outgrowth of private enterprise, and it is here that, in the past six years, the duplex, quadruplex, telephone and phonograph have been given to the world. We shall hope, with Mr. Walker, that "the country which gave birth to Franklin, to Morse and to Henry, and which is now the home of Gray, of Edison, and of Bell,"

will not be behind hand when the grand record is published.

Some of the French papers having announced that, owing to the unusual quantity of exhibits, the opening of the exhibition would be postponed, M. Berger, the Commissaire General, has authorized the statement that it will certainly be opened on August 1, as before appointed.

WHEN the telephone was invented a cry was at once raised that it would soon supersede the telegraph. One of the good results of this "scare" was that it impelled a good many operators who had been turning their attention to phonography to brush up their knowledge of short hand and begin practicing it. And many who had not taken up the study until the telephone excitement arose addressed themselves to the subject at once. Of these men the writer recalls one who was particularly diligent. He held a position in a railroad office, and worked from early morning until seven at night, but so great was his persistency and effort that he mastered the art of writing phonography in a few months, after sitting up until one and two o'clock to transcribe the notes which he had taken from his wife's dictation. Public business, transmitted by telephone, and taken down in short-hand, has not yet supplanted the telegraph, nor is that change so near at hand that any one need throw away his key and sounder just yet. However, the leased wire idea introduced by the Mutual Union Telegraph Company is opening up a new field for those who combine the qualities of a good operator with those of a fairly expert stenographer. The young man referred to above has already found a lucrative place in one of the leading banking houses, where his services are appreciated as they never were by his telegraphic employers, although he is one of the best operators in the profession. His hours are easy; he is treated like a gentleman, and he has been specifically informed that if he holds out as he has begun there is no position in the house employing him to which he may not reasonably aspire. Compare this inducement to work up to the top of one's bent with the attitude the telegraph companies assume toward their operators, and think of the contrast!

But what we set out to say was this: Operators who are masters of their profession have every incentive at this time to become phonographers. The private line people need their services; journalism needs their services and there are dozens of places outside of the telegraph offices where they can earn good salaries and still have a future before them limited only by their education, intelligence, worth of purpose and reliability. Let them think of this and be fitting themselves for the positions that await them in the future. And we trust that none will make the blunder of attempting a short cut to proficiency by trifling with any of the mongrel order of sign writing. Although it is often a matter of taste, Ben Pitman's is by many considered the best style; Graham's is excellent and Munson's is fairly good. Then there is a system called "Takigraphy," which has many warm friends among its votaries. The others are catch-penny affairs and are never used by stenographers of reputation. The great short-hand experts of this country are Miles, Warburton, Tooley and McEwen of this city, and to them any person who is at all doubtful of the correctness of the above proposition is respectfully referred for information.

There is a large class of first-class telegraphers



in this country who are worthy of something better than "pounding brass," at the same or even lower salaries than they received when they were ten years younger, and it occurs to us that, next to making their advent in journalism—and the profession requires peculiar qualifications not possessed by all—the offices of merchants and bankers who have leased wires offer the best opportunities for them to rise, by diligence, tact and the exercise of faculties which at present certainly do not much more than bring in their bread and butter, as telegraphic corporations are conducted in this era of speculation and open disregard of individual interests.

IN response to the assurance of a prominent Western Union official, published last issue, that, with one or two unimportant exceptions, no reductions had been made in operators' salaries anywhere, we to-day print two communications which show that reductions have been made in several Southern cities.

THE OPERATOR would much rather praise than find fault—in fact, would prefer that there should be no occasion for it to find fault. It, moreover, is inclined to give the General Manager credit for commercial sagacity and a desire to treat the employés at least fairly.

In view of these facts, and of the further one that the Assistant General Manager, whose position ought to make him familiar with such matters, was not aware of these reductions in salaries—for there is no question that his statement was based on his ignorance of reductions having been made—we are led to infer—or, at least, to hope—that much of the credit, or otherwise, for these reductions is due to local superintendents, who expect thereby to create a favorable impression at headquarters. Indeed, we have recently had a case of this nature in the East. A certain superintendent, so the story goes, fearing that his position was not very secure, took it upon himself to cut down the salaries of the employés in his district. Bringing the revised pay-roll to the general manager, he pointed with pride to how "economically" he was in future going to run the district. He was considerably taken aback, however, when his superior instructed him to put the salaries back where they were, and added, somewhat tartly, that when the company desired a reduction in salaries superintendents would be duly informed. It is believed that this superintendent will soon be looking for a position with one of the new companies.

The fact is that *good* operators are extremely scarce, and those who have the permanent interests of the Western Union at heart, will not—and ought not—to encourage a still further thinning out, by this penny-wise, pound-foolish policy of increasing the hours of labor, or decreasing the amount of compensation paid competent and reliable men for conscientious and intelligent work, which we regret to see several superintendents show a disposition to indulge in. We hope, therefore, that General Eckert will stem the tide of dissatisfaction which at present unfortunately exists, by at once giving all his superintendents similar instructions to those he is reported to have given in the instance quoted above.

THE electric light is making excellent progress, both in this country and in Europe. All sorts of predictions were made of its failure. Among others it was too expensive; electric light could never be produced cheaply enough to compete

with gas; while it might be utilized to light large areas, sub-division was an utter impossibility. We find, however, that the electric light has already replaced gas in a large number of mills, factories and public buildings, at home and abroad, and sub-division is so far an accomplished fact that the entire building of the Edison Electric Light Company, on Fifth Avenue, this city, is nightly illuminated in this manner. The factories of the company, moreover, are running to their fullest capacity, turning out lamps, street mains, and other things necessary to supply the demand for the introduction of the light in stores and private houses. The central stations, it is expected, will be ready and street wires run so as to commence the lighting of houses by September, when a war with the gas companies may not unreasonably be expected. Mr. Edison says the company will commence with the same rates as are now charged by the gas companies, although he claims that the electric light can be supplied at a much lower price. If the gas companies reduce the rates, he adds, it will be a splendid advertisement for the light; if they do not, the company will make very large profits. The Brush, United States (Maxim's System) Weston, Standard, New York, and other electric light companies each report that they have all the orders they can fill for many months to come. The above companies will all have extensive exhibits at the electrical exhibition which opens at Paris, August 1. An interesting article on the subject of electric lighting, by Mr. W. H. Preece, will be found in another column.

A COMMITTEE representing employés of the New York City Departments recently called upon the Mayor in reference to an increase of pay. The committee added that the men are often required to work overtime, but that they are not paid for overwork. The Mayor replied that this was all wrong; that overtime should be paid for; that he employs many men in his own private business, and is paying more now than formerly for labor, and that the city ought to pay as much as private employers.

The Western Union, in some of its offices, has inaugurated a system of making the men work extra, when occasion requires it, without any compensation therefor. Just how a company can, with any show of justice or fair play, expect its employés to perform several hours gratuitous labor after their regular duties for the day are over, we confess we cannot understand.

An employer who pays a stipulated sum for nine hours' daily labor, has no more right to demand ten or eleven hours' work in a day, without a corresponding increase in salary, than a customer who pays for a ten-word message has to expect the company to transmit a fifteen or twenty-word one, without charging for the extra words. Of course, an employé should so far study his employer's interest as not to refuse to remain after his regular time when, at rare intervals, an unusual or unexpected increase in business demands it; but even in that case, fairness demands that he be either paid for the extra service or be allowed, at some time, a half holiday to make up for it.

MANAGERS of telegraph companies would find it profitable to look into the question whether increasing the hours of labor, reducing salaries, forcing employés to work after their regular time without extra compensation, repudiating the rules of civil service in appointments, and the like are, in the long run, wise and judicious measures. For instance, does reducing salaries

pay? If the question were one solely of sentiment, if the work would be just as well performed were salaries thirty or forty dollars a month as it would did the company pay eighty or ninety, the matter would be altogether different. But the quality of the services rendered depend almost entirely upon the value put upon them by the company. An important factor in the success of the American Union was that it took advantage of the suicidal efforts of the Western Union to reduce salaries and by paying fair wages for good work was able to enlist under its banner the finest talent in the country. To-day, we find, one after another, our best men resigning to engage in other business; new companies can take their choice from among the Western Union's most valued employés; managers are forced to refuse to accept resignations until they are able to fill the vacant places; and one is led to ask why it is so, or whether such a course is a profitable one in the long run to the companies.

A TELEGRAM from Montreal says that the Board of Trade of that city, on Wednesday, July 13, passed resolutions adverse to the proposition to allow the Montreal Telegraph Company to pass into the control of Jay Gould and the Western Union Company. The proposition of Mr. Gould is that the Dominion Telegraph Company, now leased to the Western Union, and the Montreal company, shall amalgamate and be leased to the Great Northwestern, whose directors shall guarantee the Montreal shareholders eight and the Dominion shareholders six per cent. per annum. The Board of Trade calls upon the government to take such action as will protect the commercial interests of Canada by preventing the telegraph lines of the country being handed over to foreign control. It now looks as though a meeting which was held on Saturday will develop a fierce struggle between the shareholders willing and those unwilling to join fortunes with the Western Union.

A CABLE dispatch from Berlin says that the United German Telegraph Company has entered into an agreement to use the five cables of the Anglo-American Company exclusively, and not those of any other company. Connection will be established with Valentia by wire from Creetseil, East Friesland, passing through the British Channel and around the west coast of Ireland. Telegraphing to America from Germany will consequently be as cheap as from England.

THE new companies, particularly the Mutual Union, are making very encouraging progress, and we soon hope to see a very healthy opposition in the field once more. Col. J. J. S. Wilson, 120 Broadway, New York, is General Superintendent of the Mutual Union. Those of our readers desiring information as to that company can doubtless get it by addressing the Colonel.

Mr. THOMAS BARRACLOUGH, of Manchester, England, advertises in another part of the present issue that he is prepared to furnish complete sets of machinery for the manufacture of telegraph cables. Our readers who wish anything of this kind will find it to their interest to correspond with Mr. Barraclough.

THE OPERATOR is supposed to be a 16-page paper. For several months, however, it has not been smaller than 20 pages, and to-day, for the purpose of "clearing up," we issue a 24-page paper.



### The Telegraphers' Union in the West.

The telegraphers held their regular monthly meeting yesterday afternoon. The principal business transacted was the perfection of their organization and the enrollment of members. Letters were read from similar organizations in other cities, showing that extraordinary progress is being made in perfecting organizations at all the chief telegraph centres in the country. The form of the Union is such that not only are the operators in all the large cities closely bound together, but those at the small stations are included. A wonderful unanimity pervades the craft all over the country, and at some places every operator has been enrolled. The organization in this vicinity is increasing so rapidly, and meeting with such encouragement from ex-operators, that it will soon be the painful exception to be classed among those who are not members.

Although the meeting was held with closed doors, it is given out that the object of the Association is for the mutual benefit of its members, to elevate and promote the interests of the fraternity morally, socially and intellectually. Whether it is to be an organization after the order of Trades' Unions could not be definitely ascertained, but from individual expressions of some of the operators present it is fair to presume that to a certain extent that will be one of the objects of the Association. Old operators that refused to have anything to do with the old "Protective League," which organized the formidable strike in the winter of 1870, are taking active part in the organization of the "Mutual Union."

One operator said yesterday: "It is time that we were doing something. I came into this office ten years ago at a salary of over \$100 per month, and now it is 25 per cent. less than when I commenced, and the work is three times as hard, and the number of hours of work much greater." Another said: "We have work here in Cincinnati for at least twenty regular first-class men, but the company refuse to employ any of the 'subs,' on the regular force, and only pay them for the actual time they work. When they do employ an operator it is always some amateur, and a first-class operator gets left. We will have to sit down on the pupil business if we want to make any headway."

Whether or not the new society is of the protective order, it is certain that the wire-workers are not at all satisfied with their present condition and the policy of their employers.—*Cincinnati Enquirer*, July 11.

### Stored Electricity.

So much unmitigated nonsense has of late been uttered about "secondary batteries," so called, both within and without scientific circles, that one is prompted to summarize an exceedingly interesting and clear letter by Professor Tyndall to the editor of the *London Times*. The letter describes the nature of the secondary battery so lucidly from the first principles that a boy can easily understand it; he disposes of priority claims in an incontrovertible manner, and he deprecates the use of such phrases as "box of electricity" in a way which deserves thanks. Immerse two different metals in an electrolyte and connect them with a galvanometer, and a current is shown to pass by the deflection of the needle of the galvanometer. But if two homogeneous plates of platinum are substituted for the two different metals first placed in the electrolyte the needle of the galvanometer remains stationary. The currents, if any, neutralize each other. Practically there is no current indicated. When, however, the wires connecting these homogeneous plates are detached from the galvanometer and joined—it may be for a moment even—to a voltaic battery the current which immediately passes destroys the homogeneity of the plates, because if the electrolyte be acidulated water, a film of hydrogen will cover one of them and a film of oxygen the other, and the platinum

plates will thus differently coated act just like an ordinary voltaic battery, for a certain time, violently deflecting the galvanometer needle when the wires are connected with the galvanometer. "The experiment may be varied in 50 or 500 different ways, and when, instead of the films of gas, solid layers are deposited electrolytically on one or other of the homogeneous plates, the duration of the current is prolonged. Several cells thus rendered active through the agency of an extraneous current, constitute what is known as a 'secondary battery.'" Ritter, a native of the German village of Liengitz, who died exhausted by restless labor, poverty and disorderly living, was the real inventor of the secondary battery. Planté took up Ritter's labors, and Faure, by aiding the action of the currents of electricity—now so cheaply obtained—through covering Planté's plates of lead with minium, has been able to surpass the power and promise of the Planté lead battery. That is the whole history of the discovery, or, rather invention, which has led some people to suppose it was something like a gasometer, or a means of securing perpetual motion or something of that sort.

### One of the "Cog Hog" Kind.

About two years ago, when an effort was made in the Councils to reduce the pay of the telegraph operators employed at the police stations, a member affirmed that "any man who could open oysters could work one of the police telegraph instruments." For about a month past a number of young men have been under instructions at the Central Station, tutored by the veterans there. The following is a verbatim copy of a message received from a police station and entered upon the reporters' blotter by one of these tyros, who are known as "plugs" among the "regulars":

"About 5 clk this P. m. Bengimin Tomlinson, & Wife was Driving along Butler St. above York Road Hoarses became frighten at Locomotive on Reading R. R. & ran away upsitting completely Demolishing containin farm & Produce serious ingering Mr. Tomlinson & the other slightly they reside in montgomery County."—*Philadelphia Times*.

### An Operator's Dilemma.

To the Editor of The Operator:

SIR: "We have nothing now that we could offer you," was the reply he received. He had worked his way into the telegraph service after a hard struggle, and had for two years devoted the whole of his time faithfully and unceasingly to the company which employed him. During the winter, when snow-storms had so blockaded the road that trains were delayed, his duty required him to be on hand during all hours of the night, there being no night operator, and with the handling of freight, selling tickets, checking baggage, telegraphing and keeping up fires for passengers night and day, with the thermometer below zero, his work was not light.

"Why don't you go and work for some other company?" asked his friend, a train dispatcher from another road who was visiting at——. "Our road will do better for you than this. You have work enough for two men here and will wear yourself out. Operators are in demand now, and there is no occasion for this working night and day on your small salary. I will find a good place for you, if you will come. Our road has quite a number of good places which it finds difficult to fill just now, on account of the scarcity of men in our part of the country. You will be sure to succeed and will not be so over-worked."

Myron A. Leavitt looked at his friend calmly for a moment and replied: "I have a wife and three little ones here; the strictest economy has enabled us to save but little; the expense of moving to some other point would take all we could possibly save for months. My superintendent is very kind, and I prefer to remain, in the hope that he may some day see how things are and make it better for me."

Some weeks later Leavitt received a letter urging him to leave his family and come. "As soon as you become settled you can send for them," it read. "Our superintendent, to whom I spoke of you, promises you [promotion as fast as he can make room for you. You will start at

the same pay as you now receive, but this will not last long, and you will, if you refuse, always regret not having grasped this opportunity." The letter contained much more encouraging advice, and was signed with the familiar name of his dispatcher friend, C. W. Reef.

Leavitt waited a few days, turning the subject over in his mind, and before he had answered the letter he was in receipt of a telegram from Reef's superintendent and another letter from Reef, once more urging him to decide upon going at once.

Who ever heard of an obscure operator being asked to accept of a situation by a superintendent to whom he had never written and with whom he had not the slightest acquaintance?

His mind was now made up. Possibly the unusual attention that had been paid him was flattering to his vanity, and was the means of seducing him from the service of the company for which he had so long labored. Anyway, he accepted the situation offered, and sent his resignation to his superintendent.

"You have been a faithful man, Leavitt," said the chief dispatcher before he took his departure. "We are sorry to lose you, and should you ever wish to return to us, I shall do everything in my power to make room for you."

One month afterward found Leavitt lying sick of a fever at a hotel in a town where he had been sent by his new employers. He had been put on night work as an extra man, and had worked during the last few weeks in four or five little country villages, where the damp air from sloughs, together with a change of water and diet, had at last brought him down, and now he was in receipt of a letter from his wife, who also was sick, asking him to return.

The lapse of another week, under the care of a skilled physician, had enabled him to be up again and he now asked for leave of absence, which was granted and a pass furnished for his return.

Arriving home he called on Mr. H. G. Wayle, the operator who had taken his place. Mr. Wayle at once proceeded to relate his grievances. The work was hard and constant; trains ran at inconvenient hours; arrangement of station was bad; boarding was high. He was often short in his cash from ticket sales; such a jam during train time and so many things to attend to, he could not "make both ends meet" here, besides being overworked. He would go elsewhere, if things continued thus.

A few days later Leavitt saw his old superintendent, to whom he related the condition of his domestic affairs and Mr. Wayle's dissatisfaction in his new position and asked if the latter could not be given something better and himself be reinstated.

"I will do it if it can possibly be arranged. You have done good service for us at——," replied the superintendent.

Mr. Wayle now wrote the superintendent that he would willingly give his place to Mr. Leavitt if extra work were furnished him until a permanent position could be secured. "Operators are scarce on the road now," he suggested, "and there will be places enough."

Mr. Leavitt wrote to his employers not to hold any place for him, as he was about to be reinstated in his old position, where he could better care for his family.

Time passed. In about two weeks Wayle and Leavitt each received a letter from the superintendent. To Wayle he said: "You will be expected to remain where you are." To Leavitt: "We have nothing now that we could offer you."

During his illness Leavitt had spent all the money he had been able to save for two years, and now, with wife and little ones to care for, he works at whatever he can find to do.

"I find it difficult," he says, "to work at anything else, after being so long in railroad business."

He makes no complaint of the superintendent, but we operators who know in what a strait he has been placed know that he has not been fairly dealt with.

How few superintendents think when they hastily write those words how keenly the disappointment is often felt; how many a good and worthy man is often needlessly discouraged, and how, with a bitter pang, he sees the silent tear steal down the cheek of his invalid wife as he reads to her the words: "We have nothing now that we could offer you."

IOWA CITY, Ia., Jan. 30, 1881.

FRATER.



## Chicago Notes.

To the Editor of The Operator:

SIR: Little did any of us think, when we entered the office July 2, that before noon that day news would be flashed over the magic wires from one end of the world to the other, announcing the attempted assassination of the President, and that by a Chicagoan, too. Fortunately for us that day, all our wires were in pretty good working condition, and there being no Board of Trade in session gave us better facilities still for handling business. Every instrument was manned, and the force, from check boy up to the manager, worked like Trojans. The hooks were refilled as fast as they were cleared. Every one looked upon the horrible deed as a great national calamity. Inspired with feelings of patriotism, we forgot for the time being all about our aching heads and throbbing breasts, snatched a bite when opportunity presented itself, and remained at our post of duty from eighteen to twenty hours. Much credit is due the chiefs and assistant chiefs for the prompt manner in which business was handled in their respective divisions. No doubt the company will appreciate such services, but how?

On the 1st a fire broke out in the basement of the A. U. office, threatening at one time to do great damage to the building. Seeing their apparent danger, the instruments and effects of the office were transferred to the W. U. in a few minutes. They are now in the room formerly occupied by the manager. The following comprises the force:

DAY STAFF.—C. Burch (chief); J. Cowdrey, W. H. Borchers, L. W. Marston, C. M. Kinne-man, Col. Harris, R. C. Gray, T. Yearnshaw, B. T. Rowe, Geo. Samuels, Chas. Richardson, Jas. Holligan, Dan. Francis, M. Adams.

NIGHT.—C. Barclay (chief), Geo. Allen, Mr. Tong, F. S. Hogan, cashier and general manager delivery and receiving departments, and about a dozen clerks whose names we were unable to learn.

NEW W. U. ARRIVALS.—Tim Collins, from Buffalo; Geo. Sea, from Wheeling, W. Va.; Cyrus W. Field, L. B. McCargar and C. J. Twohey, the tourist, from Florida.

RESIGNATIONS.—Ed. Shoals, gone to Sioux Falls, Dak.; Jack McGill, Pete Brady and Patsy Kehler, gone to N. Y.; Read, Denver; Warren Baker, St. Paul; Mort. Courtwright, Wheeling, W. Va.; Miss Newton, Lute Smith, Chs. Patch, gone home to Des Moines, Ia., on account of ill health.

D. L. Wilson has charge of the jockey club race-track office this season. Al. Baker has returned from his vacation in Michigan, looking as brown as a berry.

The Brotherhood of Telegraphers is drawing the best operators, most steady and reliable in the office, into its fold. The society, at its last meeting, which was a very enthusiastic one, showed a roll of membership of one hundred and fifty, and something like a hundred dollars in the treasury. This is very encouraging indeed for those who have it in hand.

Two ventilators have been inserted into the roof communicating with the operating room. This is a want long felt. We get some wholesome fresh air now. Superintendent Tubbs is evidently studying the comforts of the operators, and we tender him our hearty thanks through THE OPERATOR for showing so much consideration.

The only way for an operator to get a vacation, in Chicago now is by resigning his position. We had some hopes that the managers here, as well as those elsewhere, would have laid to heart seriously your excellent article in a previous issue, on vacations.

The picture of John Lenhart, in your last issue, was very much admired by his friends in this office. We thought we saw a striking resemblance between it and Dad Armstrong of the W. U., Omaha.

### A Lesson that Should be Learned from the late Reunion.

To the Editor of The Operator:

SIR: There is no denying the fact that those who went with the American Union at the start have been taken care of. Many of them, indeed, have been well taken care of, and there are even a few whose progress and advancement has been

more rapid—perhaps too much so, either for their own ultimate good or with justice to those passed over—than would have been the case had not a forced growth introduced material almost before it had fairly time to sprout. Had the result of the contest been different, however; had the new element not been successful in getting control, it follows, of course, that the people who have become resigned to their fate, after having held on, in many cases, almost for a lifetime, would not have become resigned, but would have still held on. They have gone, though, and others, some well known and some not, have taken their places.

It may be that they who are being thus rapidly pushed ahead are of the right stuff, and again it may turn out that they are not. One thing is pretty certain, at least; and it will be well for all operators to bear it in mind. It is this: The opposition has succeeded in buying out the old established concern, and the opposition has the best of it.

But how often has it turned out this way? How often? Can a single case be recalled? It will be seen from the singularity of the termination that there is necessarily a powerful reason for it. There is. Let the unreflecting meditate, and the unthinking stop and consider. There is not another general manager, with a mighty wide-awake though somewhat forgetful "check mate" at his back, to produce the same results under the same or similar circumstances. The good time has come and gone for the present.

The new aspirants for public favor will be on hand shortly, no doubt, and the usual fine offers and openings will once more cheer and gladden us. When they do come, close both eyes tight and look as far ahead in the gloom as possible. Then don't do anything hastily, but take your time. If you have a position that returns you a steady, though it may be not one of the largest, incomes, with a chance for promotion in the regular order of things, stay where you are. Do not leave. If you do leave and transfer your valuable aid to the new competitor, take the precaution of making a contract in writing for, say, five years from date. You will then be taken care of and may have reason to commend yourself for your forethought and prudence.

Get rich slowly. This is an exceedingly easy task in our business, and you won't experience much difficulty in learning how to do it. If you are young and ambitious, it may come a little hard at first. Be not disheartened if your realizations fall short of your anticipations; that is the common fate of all of us.

Still further bear in mind that when you jump at the deceptive but glittering bait held out to you, another jumps into the vacancy thus created; another jumps in somewhere else, and when this process is continued to any extent it generally happens that a good many of the starters are picked up and dropped down again at the quarter or half-mile pole without having been obliged to labor and learn how to get there. This is bad for them in divers ways, which will readily become apparent with a little scrutiny, and it may prove to be exceedingly disastrous to you, when you manifest a desire to return, and begin to realize that you never did intend to leave there, anyhow.

TOM TANGLE.

NEW YORK, June 21, 1881.

### Salary Reductions in the South.

To the Editor of The Operator:

SIR: In your issue of the 1st inst., I find your reply to a correspondent, giving the authority of a "prominent Western Union official" for the statement that no reductions had been made in operators' salaries anywhere with the exception of a slight change in the case of a clerk in Charleston, etc.

Allow me to correct the statement of the p. W. U. o., by saying that the salaries of the operators in this office were reduced five dollars each per month, from June 1; one thirty-five-dollar clerk discharged, the salary of the cashier and bookkeeper reduced from one hundred to seventy-five per month, and the operating force reduced one man for the summer. The bookkeeper is an operator, twenty-five years in the business, with a large family to support. The rest of us have been at the key from twelve to twenty years, and with increasing years come increasing expenses. If this is not reducing salaries, and with a vengeance, too, what is it?

We are not allowed extra pay, and never claimed any until this late cut in the force. In reply to our respectful petition we were told that it could not be granted under any circumstances. Americans generally have the name of being independent, but the English are ahead of us. Let us copy from them. "TRUTH."

CHARLESTON, S. C., July 6.

To the Editor of The Operator:

SIR: In an editorial in your issue of the 1st instant, you state that in conversation with a prominent W. U. official you were told by him that no reductions in salaries had been made anywhere, except in the case of a clerk in Charleston, and in one or two instances in Philadelphia. On May 15, all the operators receiving ninety dollars, the two chief operators and the manager were notified that their salaries would be reduced five dollars each on and after June 1. This reduction was accordingly carried out last month. Like reductions were made at Atlanta, Charleston, New Orleans, Montgomery and other points.

Out of the ten or twelve operators employed in this office at the time of the reduction, only four were receiving ninety dollars, the remainder receiving from eighty down to fifty dollars. Our force has not been increased since the reduction, nor has our extra pay been discontinued as yet. The force has been increased at Atlanta by the addition of two or three American Union men and the extra pay discontinued. The force in Atlanta was inadequate and an increase was a necessity. The extra pay has also been discontinued at Montgomery and New Orleans, but whether the forces have been increased I do not know.

According to my information, the operators in the offices where the extra has been discontinued are still called upon to do extra work for which, of course, they receive nothing.

As to the extra pay-rolls in a few of the Southern cities being very large, I would state that the business is heavy in the South from about September till May or June, and a great deal of extra work is necessary, as the regular force, working only full time, cannot handle the business promptly. Mr. John M. Crowley, who has been Manager of the Western Union here for the past twelve years, was relieved on June 1 by Mr. W. L. Brenner. Mr. Brenner has been chief clerk for some years in the office of his father, Supt. J. A. Brenner. He has, by the new arrangement, to perform the duties of superintendent, chief clerk, and those of the manager of this office.

FACTS.

AUGUSTA, Ga., July 7.

### Milwaukee Melange.

To the Editor of The Operator:

SIR: The long-looked-for consolidation between the W. U. and N. W. telegraph companies was effected on the 1st instant, and it is seldom that a more disappointed and disgusted lot of telegraphers was ever assembled together than there was on the morning of the first, when the N. W. force learned of the changes that had taken place. The ladies were particularly grieved. Before they had had reasonable hours and an hour and twenty minutes for dinner, with no night or Sunday work. They were, however, at once put on a par with the men in this respect; allotted three hours' work every other Sunday and required to report for duty for two hours two nights during the week, besides being allowed only thirty minutes for dinner. The first two days they spent this slight cessation from duty in all having a good cry. The men talked more independently, and all that was required was a leader in order to have induced the whole force to suspend work until their wrongs were in a measure alleviated. No extra is paid, and men are compelled, on account of the extremely short-handed force, to work from eleven to fifteen hours a day without even a "thank you" from the officers of the company. How long this will last it is doubtful to say, but if resignations continue to be handed in at the rate they have been during the past week, it will not take long to wholly depopulated the Milwaukee office. The manager was forced to refuse to accept several resignations until he could find men to fill their places, which will take several years at the present demand for situations. The following have resigned during the past ten days: Messrs. Davie,



Ander-on, Marlet, Barker, Gifford, Palmer and Brown. The recent additions to the force are Messrs. Houghton, from St. Paul; Worth, from Chicago; Scott and Morris, from the A. & P. Mr. E. M. Shape is day chief over the combined forces, with W. H. Maher as assistant, while Mr. R. T. Fitzgerald, formerly night chief on N. W. side, oversees the combined forces during the still (?) hours of night.

The remarks of your Milwaukee correspondent in your last issue, regarding the questionable mode of procedure taken by a petty chief in venting personal spite on certain operators in this office, are fully borne out by the petty chief's latest actions, before he got relegated. However, as he is now looking for a job, it is better to drop the subject for the present.

OCTOPUS II.

## Cleveland Chronicles.

To the Editor of The Operator:

SIR: On July 6, Mr. George H. Wadsworth, late manager of the American Union office, was appointed chief operator of the Western Union office here, vice Mr. C. F. Stumm, who now takes charge of the night force. Previous to his appointment as manager of the American Union, and for many years, Mr. Wadsworth was assistant chief operator under Mr. Stumm, and gained quite an enviable reputation as a skillful electrician, and some time ago, at the request of friends, he gave a series of lectures on electricity, which were quite popular. So, you see that Mr. Wadsworth is no stranger to us, and as he steps into his new shoes they do not seem to hurt his corns as new shoes are apt to do.

Mr. E. C. Stockwell will work a wire, as will also Mr. W. A. Manning, late night chief W. U. office. Our sympathy is with the unfortunate. There are many stumbling blocks in the path of life, and if, when we stub our toes and fall we can rise feeling stronger and more secure, perhaps our little tumbles will be blessings to us after all. Mr. Geo. A. Leid is in the city, and we understand that his services are to be secured by the new management. George is a finished operator, and what we need is more like him. Mr. C. W. Heaton has recovered from his illness and is again on deck. Mr. L. C. Belding, late manager of the marine office here, has accepted a more desirable position as operator for D. M. Osborne & Co. Mr. A. A. Briggs is working extra when off duty at Wright & Co.'s broker office, as is also Mr. W. C. Ruthenberg. Mr. Oscar M. Sawyer has returned from a ten days' sojourn at Newark, Ohio. Mr. M. E. Dunn, like many others, looks haggard by long and constant labor.

Business is very heavy with us, and many an important message before it reaches its destination is like boarding house steak—very stale. The weather during the past week has been intensely warm, and if it were not for the assurances of the "revised edition," we should suspect that we were verging on—well, I DUNNO.

## The Excitement at Washington.

To the Editor of The Operator:

SIR: We were all taken completely by surprise Saturday morning, having no idea of how much work we had to do before we should get home again. At about 9:30 a. m. some one sent a telegram saying Garfield was dead, and in half an hour dispatches were coming from all over the country asking if the report was true. Manager Whitney had all he could do to answer dispatches of this nature addressed to him. The front office was full of people trying to push their way to the receiving window. It seemed as if everyone wanted to send a telegram to his friends. Operators arrived at 8:30 p. m. from Baltimore to help us out, and were set right to work. We had over 270,000 words of press Saturday night, the highest ever handled in Washington in a single day.

On Tuesday Mr. Whitney received the following dispatch:

MANAGER WHITNEY: The prompt and satisfactory manner in which our employes have met the emergencies of the service during the past few days deserves more than a passing recognition. Disregarding Sunday and holiday hours, they have remained on duty day and night, enabling us to keep the public all over the country constantly advised of the condition of the Presi-

dent. You are authorized to see that they are properly remunerated for the extraordinary service they have so willingly rendered, and to express to them the thanks of the company.

(Signed), THOS. T. ECKERT,  
General Manager.

The delivery and receiving clerks and assistants deserve a great deal of praise for the prompt manner in which they conducted their respective departments. The delivery ran over twenty-five hundred on Saturday, and the received messages even more than that.

WASHINGTON, D. C., July 7.

## Telegraphers' Mutual Union.

To the Editor of The Operator:

SIR: New names are continually being added to the already long membership list of the Telegraphers' Mutual Union. At a meeting of one of the branches last Saturday afternoon twenty-five new members were initiated. Two other branches held meetings this week to initiate new members. In this city there are five branches organized, all of which are in a flourishing condition and accomplishing much good. Two operators have acknowledged that, although they have always received fair salaries they have never had a dollar in a bank until the Union deposited their initiation fee.

Operators, when asked to add their names to the list, respond promptly and willingly, showing that a great deal of interest is taken in it. Two weeks ago the membership list showed 125 in good standing. On the 15th inst. this number will be increased to at least 200. As the Union becomes better known, and its objects understood throughout the city and country, its growth will be more rapid. But up to the present time its success has been most flattering.

Outside cities are sending favorable reports. Chicago, Cincinnati, New Orleans and many other places have organized, and are meeting with success. In most places every man has joined, showing that operators, who heretofore would have nothing to do with organizations, are now coming forward, willing and ready to push forward the good work begun.

NEW YORK, July 13.

T.

## Chicago, St. P., M. &amp; O. Personals.

To the Editor of The Operator:

SIR: Mr. C. E. Hughes, who has for the past thirteen years been connected with the N. W. Tel. Co. as chief operator, is now with this company in same capacity.

Mr. J. T. Collins, formerly with the A. & P., Philadelphia, is now connected with this company in the general office, St. Paul.

Geo. F. Dengler, formerly with the P. W. & B., Philadelphia, is with this road at St. Paul.

L. C. Lamoureux, who has for the past year acted as general office operator, has been promoted to night dispatcher, St. Paul Division, St. Paul.

H. D. McFarland, of Syracuse, N. Y., is at Mankato, Minn.

Messrs. Frank & Ed. McRavey, of Milwaukee, are located at Worthington, Minn.

S. B. Castle, formerly circuit manager at St. James, Minn., can be found in superintendent's office, Sioux City.

W. G. Severance, formerly night operator at St. James, has been appointed circuit manager, and is ever ready to transfer business when necessary.

Rev. D. W. Bailey, formerly manager of N. W. and C., St. P., M. and O. office at Worthington, has been transferred to Sheldon, Ia., as agent and operator.

A. C. Avery, late of the W. U., Chicago, is now at Elroy, Wis., and considered a first-class man and very accommodating. BUD.

"Our station agent has two pupils under his instruction learning telegraphy," says a Long Island paper of —town a thriving and progressive community of about two score inhabitants. The thriving and progressive portion of the population may be readily distinguished when it is added that the office has been established there something less than a year. Let the new telegraph companies take heart, therefore. They will have no difficulty in securing talent, when they have occasion to call for it, and, it might be added, at their own figure, too.

## TELEPHONE DEPARTMENT.

Messrs. Post & Co. may now be said to make a specialty of telephone instruments and supplies in their telegraph department.

Mr. A. G. Day is making a specialty of kerite telephone cables of the Foucault pattern. This Mr. Day recommends as the best cable now known for telephone purposes.

Fort Scott, Kan., has a telephone exchange of 65 subscribers, with good prospects for 100. All the pole lines are built by the Merchants' Telephone and Telegraph Company of Kansas.

The Merchants Tel. & Tel. Co. are building an Exchange in Lawrence, Kansas, with a capacity for one hundred wires and one hundred and fifty subscribers. Sixty subscribers have already been secured. This will connect with Bismarck Grove.

An experiment was tried with the telephone a few days since, whereby Mr. Burns, Superintendent Telegraph Kansas Pacific Railroad, Kansas City, Mo., succeeded in talking very satisfactorily with Brookville, Kan., a distance of 200 miles, with all the way stations cut in.

The Western Telephone Dispatch Co., of St. Joseph, Mo., broke ground June 27, to construct a line between Atchison, Kansas and St. Joseph. It runs via the Hannibal R. R., and is of 25 feet poles, 30 to the mile, one No. 14 steel galvanized wire for four-pin arm—as it is expected business will demand more than one wire—a first-class line in every respect. Mr. Stuart Gwynne, Jr., Manager Atchison exchange, has been appointed Superintendent of Construction.

It takes nerve and patience and good temper to make a good telephone operator, and those who lack any one of these essentials had better let the profession alone. Only one person out of five on the average has a good telephone voice. They speak too low or too loud. Not more than one person out of twenty has the voice which a telephone operator should have—pleasant, even, plain and devoid of peculiarities. Let one of the best operators talk to you over twenty miles of wire and you will fancy that he stands beside you.

Olathe, Kan., a place of 3,000 inhabitants, has an exchange of 25 subscribers in operation, under the management of the Merchants' T. and T. Co. The same company has just completed an independent line between Kansas City and Leavenworth. Supt. Paul Bossart selected a route for this line by which it does not at any point run alongside of any of the various telegraph lines between these cities. The line is entirely isolated from the others, and runs over good roads, and is built with a capacity for five wires—a top pin and four-wire arm.

A new and probably the real cause of the difficulty often experienced in receiving clear transmissions of telephonic messages has been discovered by M. GaiFFE, although it does not altogether seem to account for the phenomena usually ascribed to induction. He cut two equal lengths of rods from the same bar of steel, and having strongly magnetized one of them, introduced both into a telephonic circuit. Both of the rods were then struck in the same way with the following result. The magnetized rod produced great noise in the telephone; the other rod very little. The practical meaning of this is that as iron is the substance usually employed in making the conducting wires of telephones, and is subject, therefore, when moved in the magnetic field of the earth to strong induction currents, copper or some such non-magnetic material should be substituted for iron.

The Elmira Free Press tells of a mother in that city who, bringing her sick baby down stairs for a breath of fresh air, saw her four-year-old girl on a chair in front of the telephone and overheard the following conversation in unmistakably earnest tones: "Hello!" "Well, who is it?" "Is God there?" "Yes." "Is Jesus there?" "Yes." "Tell Jesus I want to speak to him." "Well?" "Is that you, Jesus?" "Yes. What is it?" "Our baby is sick, and we want you to let it get well. Won't you, now?" No answer, and statement and question again repeated, finally answered by a "yes." The little one put the telephone back on its hook, clambered down from her chair, and, with a radiant face, went for her mother, who caught



her in her arms. The baby, whose life had been despaired of, began to mend that day and got well.

Referring to the important decision of Judge Lowell, in the case of the American Bell Telephone Company vs. Albert Spencer and others, reported in last issue of THE OPERATOR, the *Scientific American* says: "Judge Lowell virtually confirms to the American Bell Telephone Company the exclusive right of talking over a wire by electricity. If this decision is correct, then the Telephone Company is in possession of one of the most gigantic and extraordinary monopolies ever obtained by an individual or acquired by a private corporation. It will almost bear comparison with the patent issued by the Spanish sovereigns to Christopher Columbus for his discovery of the New World, by which the continent, its peoples, and their possessions, were placed under his thumb and that of his heirs forever. But the magnitude of that grant caused its ultimate downfall; and possibly the Bellonian patent may, with more justice, meet a similar fate when it reaches the Supreme Court of the United States."

The decision of Judge Lowell in the Spencer case seems to be based on the fifth clause of Bell's claim, patent of Feb. 14, 1876, as follows:

"5. The method of, and apparatus for, transmitting vocal and other sounds, telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air, accompanying the said vocal or other sounds, substantially as set forth."

The Court decides that the specific method of producing the electrical undulations employed by the defendants is different from the Bell plan, the device being made on the principle of the microphone, which has been very much improved since the date of the first Bell patent, but says that "Bell discovered a new art—that of transmitting speech by electricity, and has a right to hold the broadest claim for it which can be permitted in any case—not to abstract right of sending sounds by telegraph without any regard to means, but to all means and processes which he has both invented and claimed."

A correspondent of the *Scientific American* writes: You recently advised to use No. 30 copper wire for acoustic telephone. My experience suggests otherwise, and I submit it. No. 22 is generally sold for this use. On a very short line No. 30 would answer, but on lines of usual length it will break too easily between supports, and too many supports interfere with the transmission of sound. On a line of 3,600 feet I use No. 22, and six supports between the terminal ends; that is, supports are 500 feet apart. The wire has stood for four years, worked well, and no breakage. No. 30 would not do at all. I have tried many varieties of telephone—wood, metal, leather and cloth for diaphragm; steel, iron, and copper wire. No. 22 copper wire, and wood diaphragms, one-sixteenth of an inch thick and three inches diameter, make the best combination. Chamois skin for longest lines makes best diaphragm, but it soon needs replacing. Steel wire produces too much roaring.

In a book on the application of the telephone and microphone to physiological and chemical uses, Dr. Boudet describes his method of automatic recording of telephone messages. To do this he removes the diaphragm of the Bell telephone, screws to the wood one end of a steel spring, the other end being opposite the pole of the magnet. To the free end he solders a small piece of soft iron, weighing one-tenth of a gramme. Attached to this piece, and in the prolongation of the axis of the spring, he fixes a light bamboo arm, ten centimeters long, and terminated by a needle of whalebone. In fact, the diaphragm is replaced by a movable armature resembling the interrupter of an induction coil. The tracings are made on smoked paper, and transferred to glass. There are some points of difference, as well as resemblance, which make it probable that tracings of this kind may be deciphered, but the matter is in embryo yet.—*Scientific American*.

At a meeting of the "Oriental Telephone Co." in London, on the 3d of June, the presiding officer announced that the company was first going to commence its operations in Egypt. It had only been formed four months, and he hoped before two more months were over that the telephones would be established in Cairo and Alex-

andria. The difficulty arose in India from the Indian government being desirous of following the lines which the British post-office had adopted, and as that matter had been for a considerable time under negotiation their position there had been an undefined one. After frequent interviews at the India Office he was glad now to be able to say that the Indian Government had abandoned the idea of interfering with private enterprise in that direction. They had, therefore, now got a clear field, and he believed there was no country in the world in which the telephone ought to be more successful than in India, and he hoped that before the next meeting they would be able to report progress of a very material kind.

W. F. Osborne, of Lake View Farm, Derby Neck, Conn., had a telephone in his house, and the wire was grounded in the most scientific manner to the water pipe over the sink in the kitchen. Last Sunday, June 26, during a thunderstorm the telephone bell kept tinkling with every flash of lightning, to the no small alarm of the ladies in the sitting-room, who finally went into the parlor to escape the electrical demonstration. About 2 o'clock there came a bright flash, a terrific clap of thunder followed within a second of time by a crash in the sitting-room, a smashing of glass in the pantry, and an ejaculation of terror from the kitchen, whence rushed the cook in great alarm. As subsequent investigation seemed to indicate, the bolt had struck the wire somewhere in the orchard, and it had been carried off by the grounded wire. But it was considerably more electricity than could be conveniently transported by a single wire. For a couple of hundred feet through the orchard the wire was melted into pieces of varying lengths, all of which looked as though they had been in a fierce fire. Along the side of the house the paint was scorched off; the copper wire with which the connection had been made with the water-pipe was melted so that only a few tiny bits could be found; the mouth of the brass faucet was likewise melted; the front of the telephone was blown into the middle of the room; the glass of a pantry window underneath which the wire passed was shattered to pieces; and a frying-pan which the cook was wiping near the sink was hurled out of her hand and to the middle of the kitchen floor. Yet nobody was hurt. Mr. Osborne purposes now to have his telephone wire grounded by way of something other than his kitchen water-pipe.

## DASHES HERE AND THERE.

Western Union stock is quoted at 91%. Last issue it was 135.

The German coal mines have commenced conveying coal to the pit's mouth by electric railways.

Telegraph and telephone men will find the Waters tree pruner, advertised on our outside page, extremely valuable for trimming limbs of trees near their wires.

The Blanchard Manufacturing Company, in addition to their branch store at 28 Scholl street, Boston, have just opened another retail store at No. 8 Tremont street, same city.

On Sunday evening last at a service of thanksgiving for the recovery of President Garfield, Rev. Mr. Pegg, of Brooklyn, N. Y., said: I thank God for the telegraph. We all should thank him for this great blessing. What terrible suspense has been saved us; what loving sympathies have poured in from all the world!

A paper on electricity and the announcement of fire, lately read by M. Bartelons before the scientific section of the Syndical Union of Belgium, stated, on statistical evidence, that with the most perfected systems serious fires were reduced to 4 per cent.; with systems of telegraph lines, but without alarms, they still reached 17 per cent., while without telegraphic assistance they reached 27 per cent.

A telegram dated Marshalltown, Iowa, July 11, reports a severe storm which did much damage to property in that vicinity. It also says that Manager Ward, of the Western Union, started east on a handcar and rafts to repair the telegraph lines, and succeeded in getting only five miles. He found many telegraph poles shivered

by lightning and the Timber Creek Bridge on the Northwestern road swept away. The creek there is a mile wide, and the Iowa River (below) three miles wide.

In the year 1880 there were in the United States 170,103 miles of telegraphic line, and during that year 33,155,991 messages were sent. The miles of wire were about 300,000. This does not include the lines used exclusively for railroad business. The other countries having the greatest length of lines are as follows: Russia, 56,170 miles; Germany, 41,431; France, 36,970; Austria-Hungary, 30,403; Australia, 26,842; Great Britain, 23,156; British India, 18,209; Turkey, 17,085; and Italy, 15,864.

Lovers of outdoor sports will be interested in the announcement of a new feature in horse-racing which is to be introduced by the new Louisiana Jockey Club at their spring meeting in April. Some of the races are to be run at night, the course being illuminated by electric lamps, forty of which are to be provided for that purpose. It is claimed that this plan will be of great value at turf meetings during the summer, as it will give the horses, as well as the jockeys and spectators, the benefit of the cool air of the evening.

Additional machinery is now used in illuminating Niagara Falls by the electric light. On the evening of July 6 the first exhibition of the new improvement was given, with a strangely grand effect. The light now is strong enough to reach the Horseshoe Falls and penetrate the huge clouds of spray. The American Falls are reached at every point and form a beautiful view. New reflectors have been placed in such a position as to throw strong rays of light on the rapids, just above the Falls, which resemble a huge sheet of quicksilver, the whole forming a magnificent illumination.

One of the uses that the electric light may possibly be put to is that of lighting railroad tracks in such a manner as to do away with headlights. At least the feasibility of using the light for such a purpose has been suggested to railroad men, the idea being to utilize the existing telegraph poles as supports for electric lights which should make a continuous illumination along the entire road. Should it seem practicable after careful investigation and tests are made, the additional security from accidents and the convenience of the plan would doubtless bring it into prompt and careful consideration.—*American Railway Journal*.

Mr. George Cumming, of the W. U. main office night force, this city, has invented a new telegraph key, which will be put upon the market by Messrs. L. G. Tillotson & Co. It will be known as the Cumming periphery-contact key, and the advantages claimed for it are that it cannot be made to "stick" and that its use will not tend to cause telegraphers' paralysis. The novel feature of the key consists of two wheels or discs swinging one upon the other at right angles, one in the curve of the lever and the other immediately below it in the insulated standard. Contact is made on the rims of these platina discs, instead of the two wire points in general use. Those who have practically tested the key speak very highly of it.

A Canadian correspondent, referring to the complaint from Chicago published last issue, that dissatisfaction exists among the night staff there on account of having to wait from four to six hours for their pay on the first of every month, asks what the Chicagoans would say if, instead of from four to six hours, they had to wait four, six, eight and ten days before receiving their pay? "This, nevertheless," he adds, "is the monthly experience of the employees in one of the principal Canadian offices, and yet they don't complain—perish the thought! Some people don't know when they are well off."

Mr. Morton Wright claims to have discovered a new and wonderful source of electrical supply. He has studied the natural process by which heat is absorbed and transmuted in the electric eel and torpedo fish—the electro-motive force of which is so great that it makes a perceptible deflection of the galvanometer through a resistance of 500,000 ohms—and claims that he can now produce, by a similar process, a powerful and constant current, requiring only moderate warmth to keep it uniform. This would obviate



the necessity for furnace, steam boiler, steam engine and dynamo-machine in electric lighting; and, if Mr. Wright's story holds good, it will prove to be a valuable discovery.

It is said that the directors of the Brush Company have found by experience that the absolute continuity of their light cannot be relied on, and that for some cause or other it is liable to cease suddenly. To guard against this disaster, the directors of the Brush Company communicated, it is said, with the Board of the Gas Company, and an arrangement was finally made that the Gas Company should keep up a full staff of men at all the points served by the Brush Company, and a full supply of gas at the mains ready to light up at any moment that the electricity might fail, all the expense of the staff and the reserved gas to be borne, of course, by the Brush Company.

The largest number of words sent from Washington to the newspapers of the country in any one day previous to the attempted assassination of President Garfield was on the last inauguration day, when the high-water mark was 190,000 words. Previous to that the largest number of words was on one day during the Credit Mobilier excitement, in 1873, when 113,000 words were transmitted. On Saturday, the 2d, the Washington office sent 275,000 words, on Sunday nearly as many, and on Monday 213,000 words. The number of words in the average newspaper column is 2,000, and on Sunday morning, therefore, the total amount of press dispatches filled at least 140 columns of the daily newspapers, no allowance being made for duplication in space by dropping the same matter for newspapers in different cities.

Mr. Huntington, through a writer in the *Art Review*, relates that when he was painting his "Men of Science," the late Professor Henry and Professor Morse were in a state of disagreement, growing out of rivalry concerning the discovery of the electric telegraph. So bitter were the feelings of Professor Henry against his more successful competitor, who, as he alleged, had lied about him and traduced him, that he emphatically objected to being included in the painting if Morse was also to appear in it. When he at last yielded to the earnest appeal of the artist, he said, "Then as far from Morse as possible." While he was sitting for his portrait for this purpose his sentiments on the subject were so violent that he would spring from his chair, and, pacing the floor with intense passion, hurl invectives against the man who had robbed him of the honors which he thought were justly his own.

Electricity has been put to many uses, and one of the most ingenious applications of it is to the middlings purifiers in place of the air blast. Frictional electricity is employed, the middlings passing under hard rubber rollers electrified by friction against a sheepskin cushion. The bran is attracted to the roller, and is swept off by brushes, the middlings passing through the bolts in the order of their fineness. The machine, which has been in practical use at a large mill for a year past, is said to be economical of power, and works without the dust and waste involved in any process of purification by air. It is quite within the range of probability that some day great flouring mills will have their machinery run by electrical engines, converting the power of water wheels at a distance, be lighted by electric lamps, and have their middlings purified by another kind of electricity.

The English government has employed women as telegraphists since January, 1870. Nominations to compete are given by the Postmaster General. The limits of age are "not under fourteen or over eighteen." They receive eight shillings a week to begin with, the highest scale of pay being thirty shillings a week, and they work eight hours a day, between the hours of eight A. M. and eight P. M. They formerly worked in separate galleries, but it was found desirable to place them in the same galleries as the men and boys, and the society and mutual influence has been productive of beneficial results. It is deemed inexpedient to employ females in night work. At the present time 968 women telegraphists are employed by government in London, Edinburgh and Dublin.

M. Leon Manet has devised a process for bleaching blood albumen by means of the electric light. The albumen is taken after separation,

and either before or after drying. It is then exposed to the light. The inventor arranged electric lights fitted with lenses or reflectors, so as to cast their light upon the albumen which is to be bleached. If it is still liquid the light is thrown upon the plates or trays which contain it in the drying stove. These plates may be made of glass, so as to let the rays pass through them. If the albumen is dry the light can be thrown upon layers of the article arranged upon the stage. In either case the process varies in duration, according as the albumen has been more or less completely separated from the clot. Under ordinary circumstances twenty-four hours will suffice to bring about a perfect decoloration.

The apparatus proposed for telegraphic photography by Messrs. Ayrton and Perry is thus described in the English journals: There is a "mosaic" of selenium cells, each cell in telegraphic communication with one of a corresponding number of devices, by which a small mirror is adjusted to throw more or less light on a screen. They thus hope to produce a pattern in light and shade corresponding with the amount of light and shade thrown on the selenium cells by a picture thrown upon them from a magic lantern, just as a photograph represents in light and shade the object from which it is taken. In practice they hope to use only a few cells, moving rapidly over the field of view, and also to limit the number of wires which would be required if each cell had a separate circuit. Further, they are trying to avail themselves of the properties of the Japanese "magic mirror," by using a metal plate and a system of magnets behind it.

The following unique application for employment was recently received by a prominent manager: "The devoted subscriber, telegraph operator Michael Friedrich Koestler, from München, Germany, permits himself to address to you the following petition: As I was active as telegraph assistant in München, etc., five years, and how the added testimony of the General Telegraph Direction in München confirms the ordered telegraphy knowledge in every point possesses, I petition you to have the favor to confer me any place as telegraph operator in the country. I am twenty-seven years old, married, studied in Germany till my nineteenth year, also the English language some years, and I am convinced to acquire the fullest satisfaction of my superiors. I have been here seven months. I exercised the American system, and I am versed in Morse, railroad office, etc. As I ask to regard my petition as soon as possible, I permit myself to request your resolution to send to my added address."

Now that Gen. Loris Melikoff has made the discovery of the most effective means of torturing the Czar's assassins, it is quite likely that the knout, the rack, the boot and the thumbscrew will be abandoned in favor of electricity. The principal factors of this new idea are said to be fictitious sensory phenomena—horrible red lights and phantom figures; sounds, compared with which the shriek of hysteria is mellow; tastes that are terrible beyond description, and odors that are intolerable. These are soon succeeded, or rather accompanied, by neuralgic torments that are as maddening as they are indescribable, but disappear almost instantaneously on withdrawal of the electrodes, leaving the victim exhausted, but comparatively uninjured, yet so completely broken down by the nervous shock that the sight of a battery forever recalls terrors that set the poor victim trembling with apprehension. Experiments in this field have been tried on a small scale by daring experimentalists, who pronounce the phenomena maddening beyond conception.

Mr. Shelford Bidwell has explained the process for transmitting pictures of natural objects by telegraph which he has applied in his telephotograph. The positive pole of a battery is connected through a set of resistance coils to a piece of platinum wire, and the negative pole to a plate of zinc, upon which is placed a sheet of paper moistened with a solution of potassium iodide. The negative pole of a second battery is connected through a selenium cell with the same platinum wire, and the positive pole to the zinc plate. The point of the platinum wire is pressed upon the paper, and the selenium being exposed to a strong light the variable resistance is so ad-

justed that the currents from the two batteries which pass through the paper in opposite directions, exactly neutralize each other. The platinum point will now make no mark when drawn over the paper, but if the selenium is shaded its resistance is immediately increased. The current from the first battery then predominates, and the path of the platinum point across the paper is marked by a brown line due to the liberation of iodine. Designs cut out of tin-foil and projected by a line have been successfully transmitted.

The *London Telegraph*, in noticing a book upon Albania, quotes a funny story, which shows how electrical science is gradually creeping into the darkest nooks of the earth. Although the discovery was made over a century ago, a high official of Scutari heard only in 1874, as something brand new, that a certain Giaour named Ben. Franklin had invented an instrument by the judicious use of which lightning strokes might be rendered harmless to human life and property. Forthwith he resolved to become possessed of one of these wonder-working contrivances; but, in putting it up he erected only the superficial part of a lightning rod, omitting the ground connections altogether. Worse still, he selected the powder magazine of his castle for the experiment, that being the most desirable place to protect from lightning. The result surpassed his wildest expectations. A fiery streak darted from the sky followed by a tremendous concussion, and when the smoke cleared off it was the Pasha's melancholy privilege to behold his beloved citadel in ruins. His Excellency now says this boasted Western civilization is a sham.

Mr. Warrington Smyth, Prof. Tyndall, Prof. Abel and others, acting in the capacity of Royal Commissioners, lately spent two days in examining and testing in various ways the utility of the electric light in the Pleasley colliery, near Mansfield, England. At the conclusion of the experiments they spoke in high terms of the results, and they will, no doubt, submit a very favorable official report. Of course, the incandescent lamp was used, but it was covered by a lantern filled with ordinary atmospheric air for the double purpose of protecting the inclosed glass bulb, when carried about, and of insuring the instantaneous combustion of the carbon filament if any fracture of the bulb occurred. The pits are 1,600 feet deep, with extensive workings. The experiments were, in this case, confined to three workings, about a third of a mile from the bottom of the pits, and about 94 lamps in all were employed. At the top of the upcast shaft the electricity was generated by an ordinary Gramme machine driven by a portable engine. From the generator the electricity passed along wires to cables at the bottom of the pit, and these cables conducted it to the main level, where it seems to have been divided by branch cables leading through side passages or gates to the places where the coal was excavated. Then by means of insulated wires the electricity was led to the lamps which gave light to the miners, who seem to have been well pleased with the illumination produced, in any position or place, without any attention on their part. The particular system used was that of Swan, which is much the same as Edison's or Maxim's.

The following circular was recently sent to and signed by all the operators and agents on the Grand Trunk Railway. For some unexplained reason, however, it was not presented to the General Manager, and now languishes in some waste-basket:

We, the undersigned telegraph operators and agents connected with the Telegraph Department of the Grand Trunk Railway, beg to present, through you, our petition to the General Manager, praying for an increase of salary, viz.: For those who have been in the service under two years, to receive an advance of ten per cent.; those from two to four years, fifteen per cent.; and all over four years, twenty per cent. on their rates of pay, viz.: Those now rated at \$1.15 to receive ten per cent., until they have served two years from date of entry, which would make the pay \$1.26; at the expiration of the first two years, to receive an additional advance of five per cent., making the pay \$1.32; and after serving four years, to receive a further advance of five per cent., making the pay \$1.38; and operators over four years to have the advantage of being still further advanced by being



promoted to stations rated higher at the present time. And we also pray that these three be the standing grades of pay, and that the existing classifications of the stations be maintained. The extra amount of work that is now being done on the road necessitates extra care, diligence and promptitude, and greatly increases our responsibilities and duties in connection with that department. That the cost of living has of late years become so enhanced that it is almost impossible to exist on the very small salary we receive. That it is also very discouraging to find almost every class of workmen holding much less responsible positions receiving much better remuneration than we are.

## NEW YORK CITY ITEMS.

### Echoes from 195.

Mr. Fred. W. Cushing, of 195, sailed on Saturday last for Europe, to take charge of the exhibit of the harmonic system at the Paris Electrical Exhibition. Professor Elisha Gray and Professor H. S. Carhart, accompanied by their wives, sailed on the same steamer.

During the past year there has been an average attendance of three outsiders learning telegraphy in the Western Union main office. Two of the students have just been given situations on the Long Island wires, but probably there will be no diminution of the number of students in the future.

Visitors to the operating room when the office was first opened were led to wonder at the unsightly screen that barricaded the ladies' or city line department from the general operating department. At that time the presence of a masculine operator within the sacred precinct was an event of more importance and consternation than the intrusion of a mouse would have been. The first innovation was the removal of the screen, but woe betide the absent minded individual who allowed his optics to feast upon the visions of female loveliness that patted a key within the still sacred department. Suspension was the penalty for staring. A year or two later the increased business and lack of female talent necessitated the transfer of gentlemen operators to the ladies' department for emergencies. Those transferred were selected for their apparent youthfulness and freedom from guile. Within the past year the ladies' dinner reliefs have been mostly male operators. Very recently a perfect innovation has taken place, and the smiling faces of gentlemen operators may be seen beaming in every part of the city line at all times, and very little restraint is placed upon them, as far as outsiders can observe. The free indulgence in conversation is made apparent by the smiles which light up their countenances, indicating pleasant enjoyment amid the cares of duty.

### Other City Items.

Mr. John Dalton, train dispatcher for the Harlem Railroad ever since the occupancy of the Grand Central Depot, has been promoted to be train dispatcher for the New York Central & Hudson River and New York & Harlem roads jointly.

A well-known firm of bookmakers up town were swindled out of about \$3,000 last week by some one who telegraphed them the wrong result of the race for the Shrewsbury Handicap. The wires had been tampered with and Krupp Gun was announced as the winner instead of Ripple.

Evidently, Charles Dickens had the American Rapid system in his mind's eye when he wrote the following conversation between Mr. and Mrs. Mantalini: "You nasty, idle, good for nothing brute," cried the woman, stamping on the ground, "why don't you turn the mangle?" "So I am, my life and soul!" replied a man's voice. "I am always turning, I am perpetually turning, like an old horse in a mill. My life is one horrid grind!"

Mr. George E. Baker has resigned his position as chief operator American Union Telegraph Company, 135 Broadway, to accept one as Superintendent of Circuits for the Mutual Union Company. On the evening of July 1 Mr. Baker was waited upon by a committee from the American Union office and presented with a handsome

gold watch, with following inscription: "Presented to George E. Baker, Chief Operator, as a token of esteem, by his friends and associates of the American Union Telegraph Company, July 1, 1881."

Scene in city line office five minutes after closing time:

Clerk—"Shall I send it paid or collect?"

Customer—"Hey?"

Clerk (raising his voice)—"Shall I send it paid or collect?"

Customer—"What?"

Clerk—"Shall I send it paid or collect?"

Customer (almost in a whisper)—"Send it right away." (TABLEAU.)

Mr. H. Robson, at present manager of the French Cable Company's New York office, sails on the steamer Nevada, Aug. 2, to take charge of the London office of the new American Cable Company. Mr. D. Le Rougetel, clerk in charge, and Mr. Joseph Ball, operator, same office, sail for England at an early day, the former to assume the management of the Liverpool office and the latter to be operator in the London office of the new American Company. These gentlemen's successors have not yet been appointed.

The Mutual District Messenger Company (limited) opened its first district office Jan. 17, 1881. Since that time they have opened nine large district offices. During the summer these districts will be filled with instruments preparatory to the spreading of the system and opening of district offices elsewhere about the city. The demand for this company's service is beyond the most sanguine expectations, and only shows how well the public support a properly conducted institution. It is proposed to introduce many new features in the messenger business as soon as opportunity offers. The company is collecting and turning over to the various telegraph companies 6,000 telegrams per month.

## PERSONAL.

Mr. J. B. Hobbs, of Greensburg, Ky., has been transferred to New Hope, Ky.

Mr. F. Michinard, Vermillion, La., will receive subscriptions for THE OPERATOR in his vicinity.

Mr. J. T. Burgess, of North Sydney, C. B., has been ordered to Canso, the terminus of Mr. Gould's new cable.

Mr. W. Irwin, formerly of Renova, Pa., is now Superintendent La. Western R.R., at Vermillion, La. Mr. W. E. Jessup is agent at same place.

Mr. R. G. W. Denison, referred to in this column last issue, is now with the Mutual Union in this city.

Mr. Geo. Warren, a well known operator, has returned to this city from Denver, Col., but is going into the newspaper business in Michigan.

The Dominion office at Sydney, N. S., having been closed, Mr. J. C. Le Cras is now operator and clerk in the H. & C. B. Ry. office at Antigonish.

Charles H. Mixer, late a chief operator in the Western Union office at Chicago, has been appointed an examiner in the Patent office at Washington.

William J. Curtis, late of the Western Union, at New York, has resigned his position and is at present "subbing" in the Washington office of the New York Associated Press.

Mr. C. H. Smith, agent and commercial operator at Spuyten Duyvil, N. Y., for the past ten years, has resigned and accepted a more lucrative position as U. S. Mail Messenger. Wm. Fitzgerald, late of Morris Dock, is his successor.

Mr. Frank T. Ecker, of the General Office C., St. P., M. & O. Line, St. Paul, Minn., is the authorized agent in his vicinity for THE OPERATOR and for the books we publish. Subscriptions and orders can be addressed to him as above.

The headquarters for the United States Military Telegraph lines in Texas and Indian Territory have been removed from Denison to San Antonio, Texas, with Lieut. L. E. Seabee, signal corps, in command, vice Lieut. Tingle, 2d Artillery.

Mr. F. R. Phillips, late of North Sydney cable office, is now working at 195. Mr. P. was the recipient of a farewell dinner from his friends at

North Sydney. Mr. J. T. Burgess, late of 195, is subbing at North Sydney, where his many friends are pleased to see him again.

Lieut. Chas. A. Tingle having been transferred from the superintendence of the Texas Division U. S. M. T. line, was, on July 4, presented by the operators of the division with a massive gold watch, chain and charm, suitably inscribed. The presentation speech was made by Chief Operator W. T. Blythe.

W. T. Loper, formerly Senate reporter for the Associated Press at Washington, but more recently telegrapher and stenographer in the office of George William Ballou & Co., New York, has been appointed agent of the New York Associated Press at Chicago.

Among recent Western Union changes are the following: At Cincinnati, Mr. G. T. Williams has been succeeded by Mr. I. N. Miller; at Omaha, W. B. Hibbard was succeeded by J. J. Dickey, son of Judge T. Lyle Dickey, of the Illinois Supreme Court; at Chicago, Col. J. J. S. Wilson is succeeded by F. H. Tubbs.

Among the well-known telegraphers who have gone over to the Mutual Union are Col. J. J. S. Wilson, of Chicago; Electrician Hadden and Chief Operator Baker, late of the A. U. (both of whom have contracts for three years), Superintendent Williams and Manager Armstrong, of Cincinnati; Manager Allen, of Utica; Manager Parsons, of Batavia, N. Y.

A correspondent from North Sydney sends us the following: "That the General Manager is very popular in this region is evidenced by Mr. C. W. Hurlburt, of the cable staff, launching a pretty little yacht and calling her the General Eckert. Probably Mr. H. expects a donation to the W. U. Boat Club, which consists of four yachts, five rowing boats and a racing shell."

John A. Hutchison, night chief of the American Union Office in Washington resigned his position on the 10th instant, and has accepted a situation with Henry D. Cooke, Jr. & Co., as telegraph operator and stenographer. Cooke & Co. lease a Mutual Union wire, and their business has greatly increased since the wire was introduced.

Mr. H. A. Clute, of Harrisburg, Pa., whose resignation as assistant superintendent took effect June 30, was on that afternoon, as an evidence of the esteem in which the operators of the district held him, presented with a magnificent set of silverware, consisting of a coffee urn, coffee pot, tea pot, slop or water bowl, cream pitcher, sugar bowl and spoonholder. The presentation remarks were made by Mr. Richard Zeigler in behalf of the attachés, Mr. Clute replying in a very feeling manner.

Twenty-five years ago Mr. William B. Sfrong, now General Manager of the Atchison, Topeka & Santa Fé Railroad, was beginning to learn telegraphing. Since then his successive steps from telegraph operator have been: Station Agent; General Agent at Council Bluffs and Omaha, on the Northwestern; Division Superintendent and Assistant General Superintendent of the Chicago, Burlington & Quincy; General Superintendent of the Michigan Central and then of the Chicago, Burlington & Quincy, going thence to the Atchison, Topeka & Santa Fé.

The funeral of Mr. J. D. Sampson, Assistant Telegraph Superintendent Erie Railway, took place at Paterson, N. J., June 28, and was largely attended by operators from each of the six divisions of the Erie. The following operators acted as pall-bearers: Mr. Powers, of New York, who taught Mr. Sampson the art of telegraphy; Messrs. M. Brick, of New York; N. Walsh, of Susquehanna; N. Parmley, of Owego, and J. C. Dunning, of Paterson. The floral decorations were very numerous and exceedingly handsome, between \$300 and \$400 having been expended for flowers, to show the esteem in which Mr. Sampson was held by his co-laborers and subordinates.

Since the income of Mr. Charles Brush, one of the inventors of the electric light, has grown to be \$1,000 per day, the usual newspaper paragraph has started on its rounds to the effect that he could not borrow \$5 at one period in his life. That statement should be set at rest, however, by "J. A. B.," who writes: "Mr. Brush is the son of Colonel Brush, a farmer in independent circumstances in Euclid, near Cleveland,



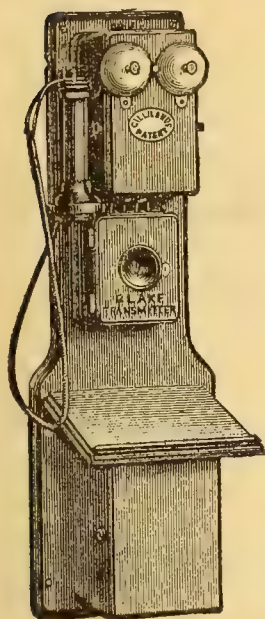




# GILLILAND ELECTRIC MANUFACTURING CO.,

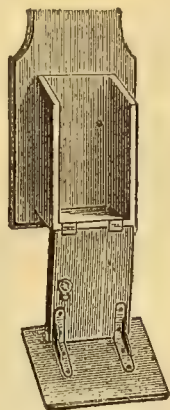
E. T. GILLILAND, General Manager,

INDIANAPOLIS, Ind.

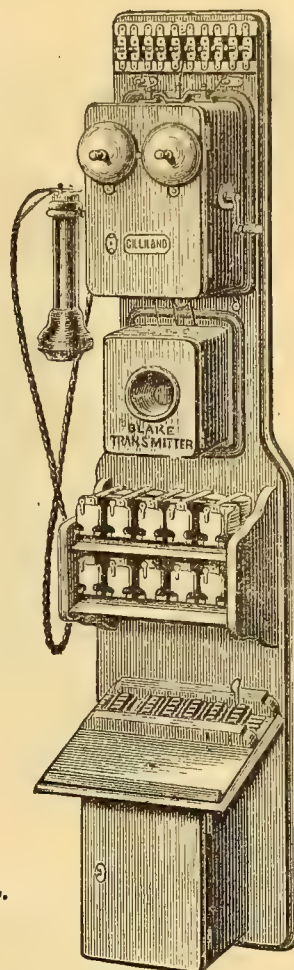


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Magneto Bell.**

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For the club system of small towns and villages.

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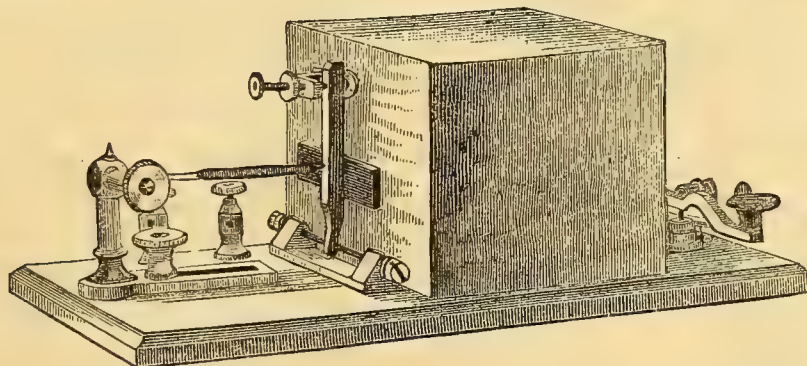
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SAMPLES SENT ON APPLICATION TO AGENTS AND EXCHANGES.

# J. H. LONCSTREET.



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BATTERIES AND BATTERY MATERIAL.

WE ARE MAKING A SPECIALTY OF

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BOX RELAYS, any required resistance, mahogany bases and boxes.

POCKET RELAYS, hard rubber or morocco cases;  
the best for railroad-wrecking purposes.

KEYS, RELAYS, SOUNDERS, SWITCHES;

a large assortment in stock, and all orders for same promptly filled.

The Cheapest and Best form of Gravity Battery is our improved form of "CROWFOOT," 90c. per cell., with 3 lb. zinc and 6 x 8 jar.

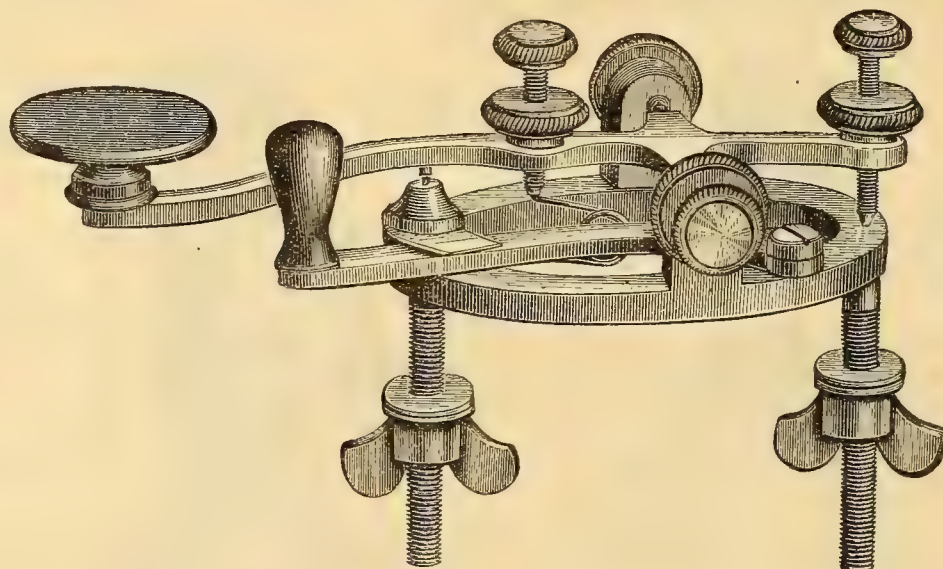
Coppers, Zincs, Jars, Blue Vitriol, Line Wire and Line Tools of every description.

We keep a full stock of STUBB'S CELEBRATED PLIERS AND VISES, and are prepared to fill all orders at BOTTOM FIGURES. Send for our 60-page Illustrated Catalogue. Our GOODS are the BEST IN QUALITY, and our DISCOUNTS THE LARGEST.

FACTORY AND SALESROOMS: 9 BARCLAY STREET, NEW YORK.



# J. H. BUNNELL & CO.'S NEW STEEL LEVER SOLID TRUNNION KEY.



BEST IN THE  
WORLD.

PATENTED Feb. 15  
1881.

We have much pleasure in being first to make and bring to the notice of Telegraphers and Managers of Telegraphs this new and important improvement in keys.

We offer it as being *more durable* and in every respect *better* than any other for-rapid and perfect sending for the following reasons:

The lever is *only one-half the weight* of the ordinary brass lever, as generally made.

The entire Lever and Trunnions together being made of *but one piece* of fine wrought steel, the common defect of loose trunnions is avoided, the strength of a heavy brass lever is obtained with much less weight of metal, and, by the perfect bearing which the solid trunnion gives, together with the use of *hardened platina points*, *sticking is absolutely prevented*.

The size and proportions are such as to make it the most perfect operating key possible to obtain, either for the hand of the skilled and rapid expert, or the beginner.

PRICE, \$3.00. FINELY FINISHED, AND LEVER NICKEL-PLATED.

LIBERAL DISCOUNT ON ORDERS FOR COMPANY SUPPLY.

Steel Lever Key sent by mail post paid, to any part of U. S. or Canada on receipt of the above price, by registered letter or money order.

## THE AMERICAN UNION TELEGRAPH CO.

New York, Dec. 18th, 1880.

J. H. BUNNELL & Co.

Gentlemen:—We have in use in this office, sixty-eight of your Steel Lever Keys.

The general verdict regarding them is, that **THEY ARE THE BEST KEYS EVER PUT ON A DESK.**

Yours truly,

WM. J. DEALY,  
Manager Am. Union Co.'s (Main Office).

## UNION PACIFIC RAILWAY CO. (Telegraph Dep't).

Omaha, Neb., January 15th, 1881.

J. H. BUNNELL & Co.

Dear Sirs:—Your instruments meet with much favor on this company's lines and give good satisfaction. The Steel Lever Keys, especially, are much admired by the operators who generally pronounce them *the best*. They at once combine strength and neatness, and are well adapted for easy and rapid sending.

Yours truly,

L. H. KORTY,

Chief Operator.

## CONTINENTAL TELEGRAPH CO.

New York, Dec. 14th, 1880.

J. H. BUNNELL & Co.

There is nothing that I can say that will be too strong in commendation of your New Steel Lever Key. Every one of our operators, without exception, regard it with decided favor, and I am now satisfied that its general use is not only a positive help to operators' efficient labors, but a decided advantage to the general service of the Company. We are using them in preference to all others. Yours truly,

J. G. CASE,

City Manager Continental Tel. Co.

## THE ATLANTIC AND PACIFIC TELEGRAPH CO.

New York, Dec. 16th, 1880.

J. H. BUNNELL & Co.

We have six of your Patent Steel Lever Keys in use here in principal office of this Company. They give entire satisfaction in every way. We consider them a great improvement on the old style of telegraph key.

Yours truly,

P. P. HAUFF,

Manager Main Office, 145 Broadway, N. Y.

## BALTIMORE AND OHIO RAILROAD CO. (Tel. Dep't),

Baltimore, Dec. 28th, 1880.

J. H. BUNNELL & Co.

Gentlemen:—I take pleasure in forwarding to you the accompanying testimonial, voluntarily contributed by the operators in Camden Station Office, to the superior merits of your New Steel Lever Key.

Very truly yours,

CHAS. A. TINKER, Supt.

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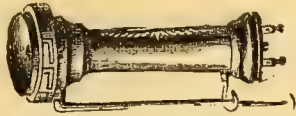
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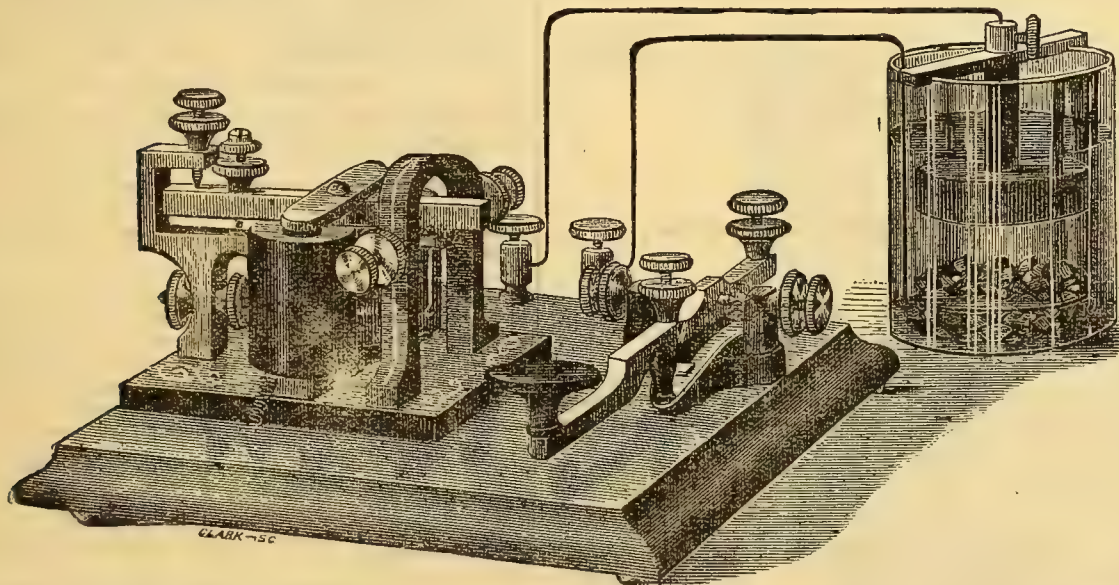
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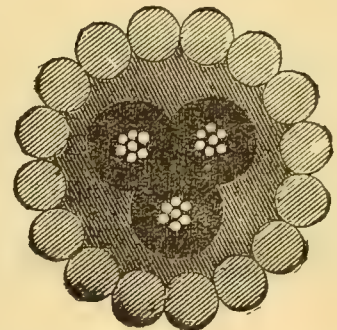
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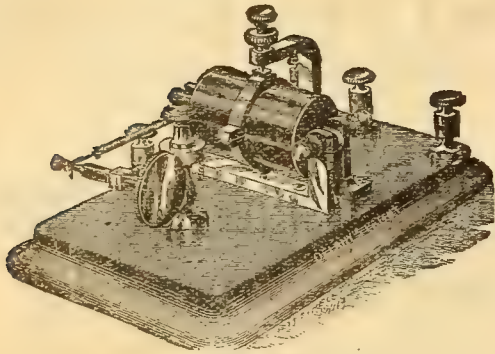
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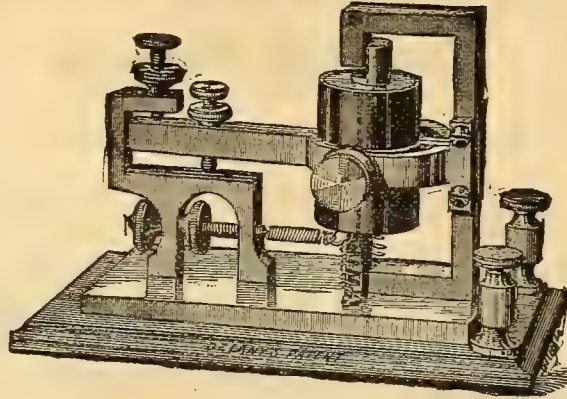
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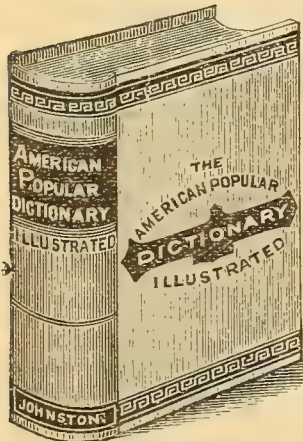
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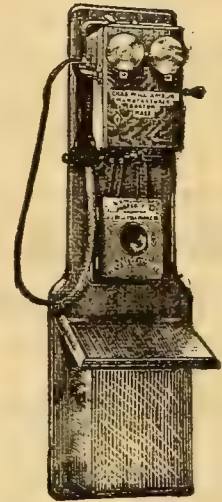
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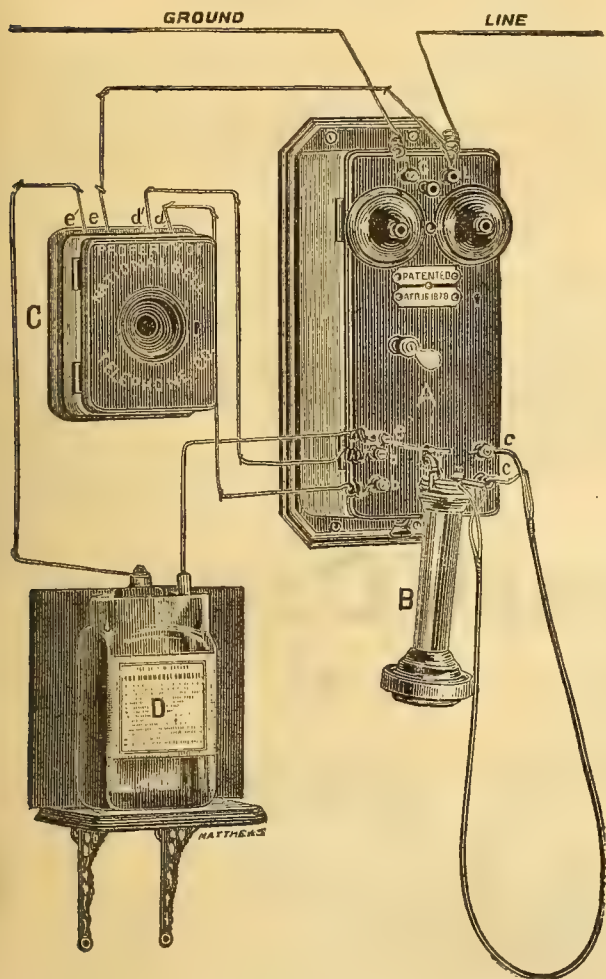
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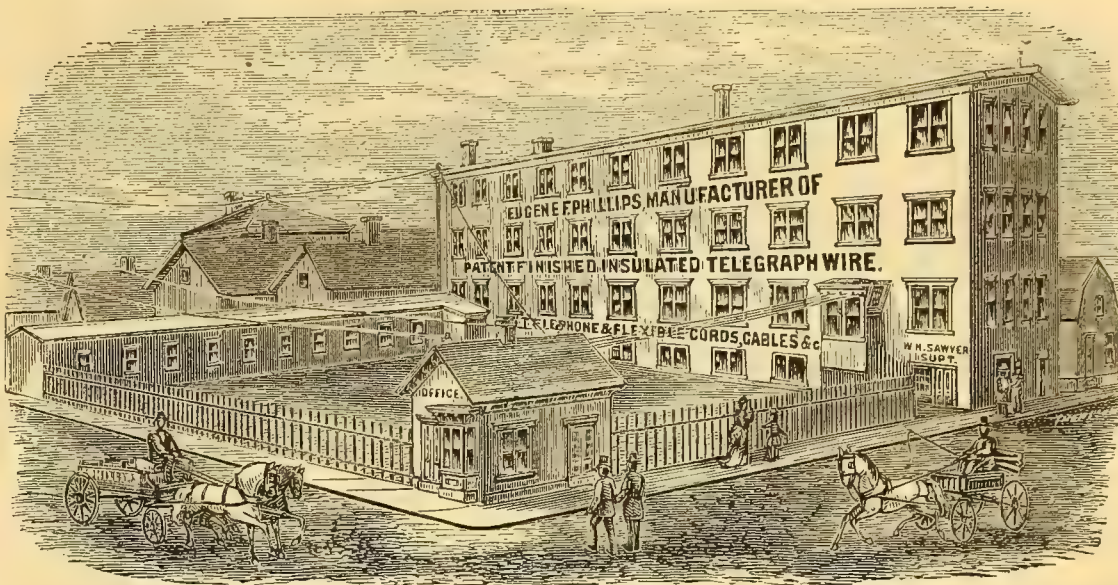
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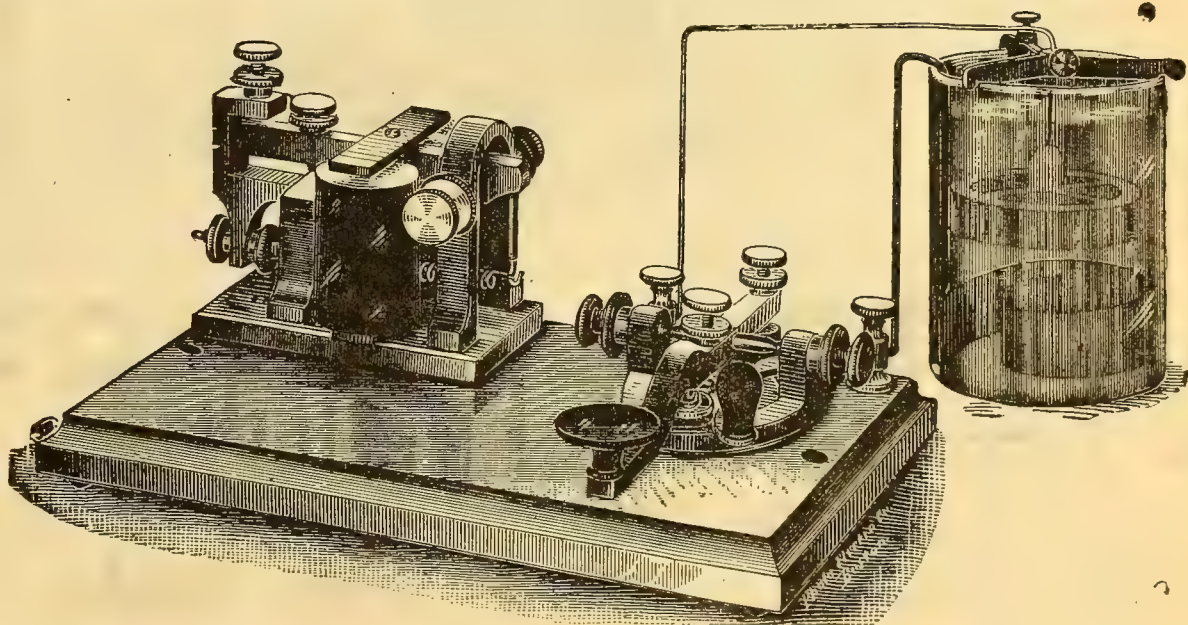
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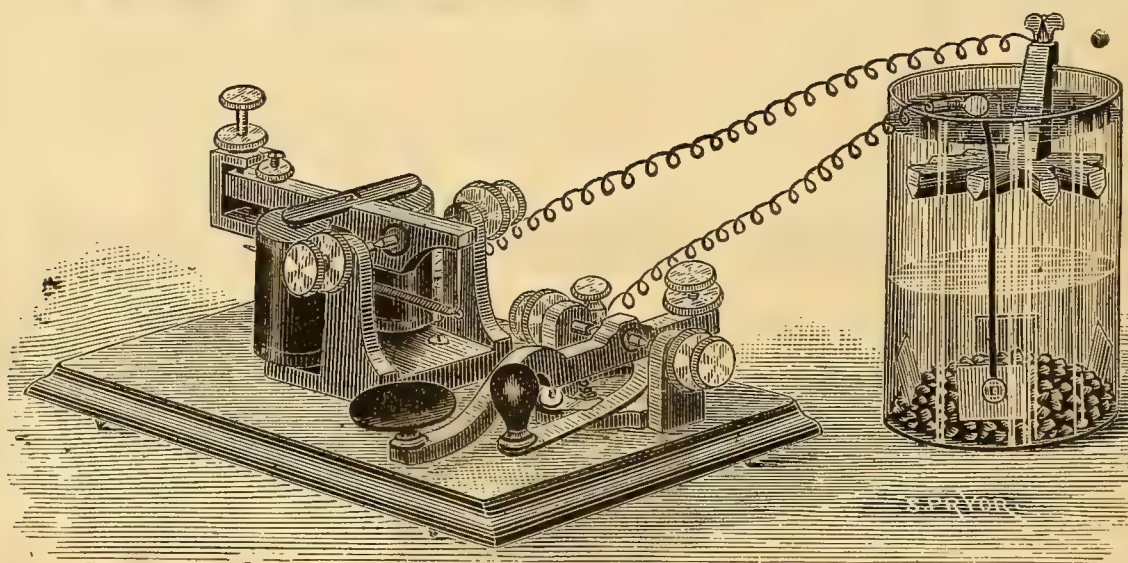
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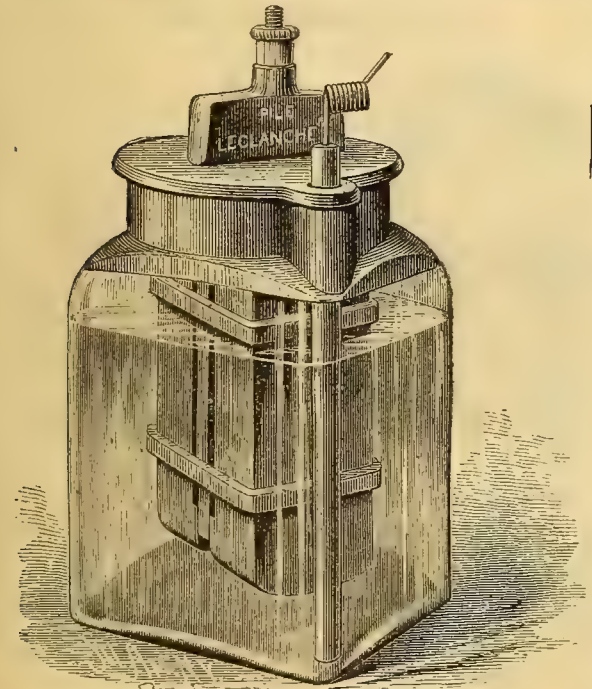
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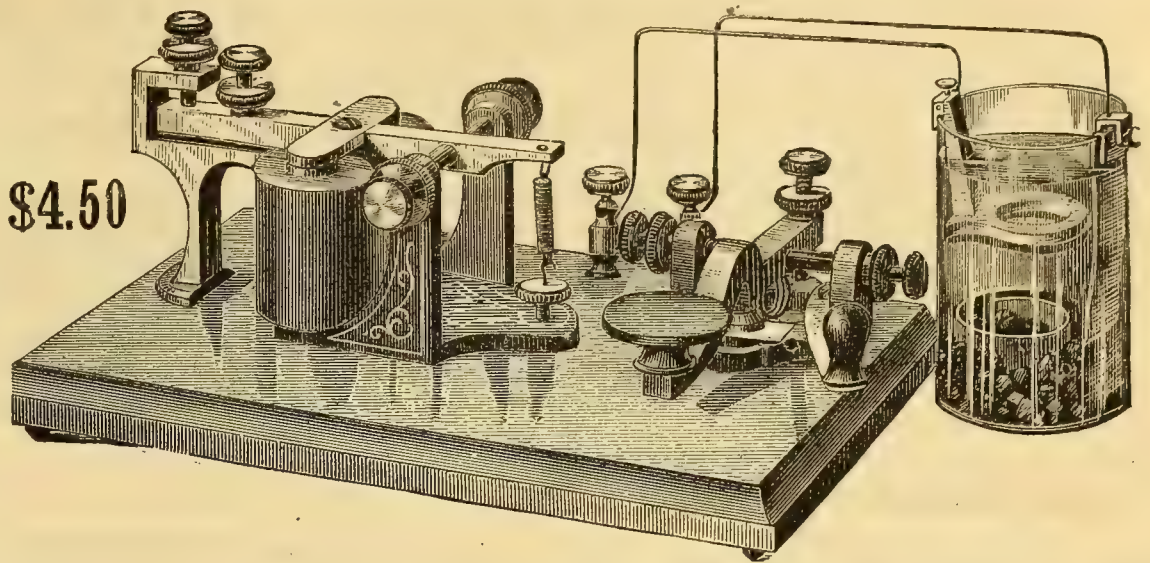
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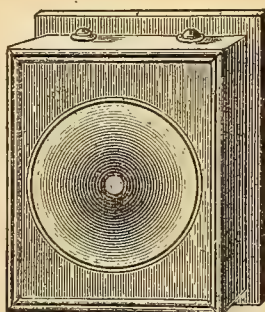
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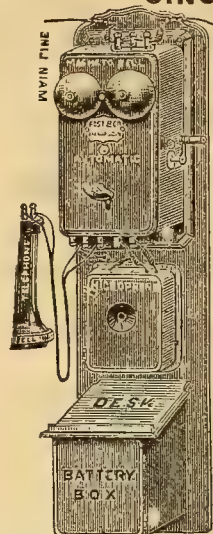
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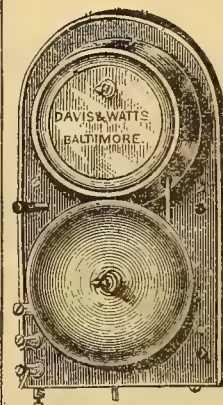
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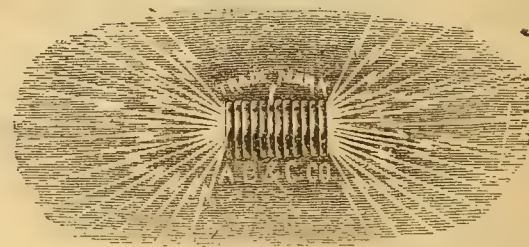
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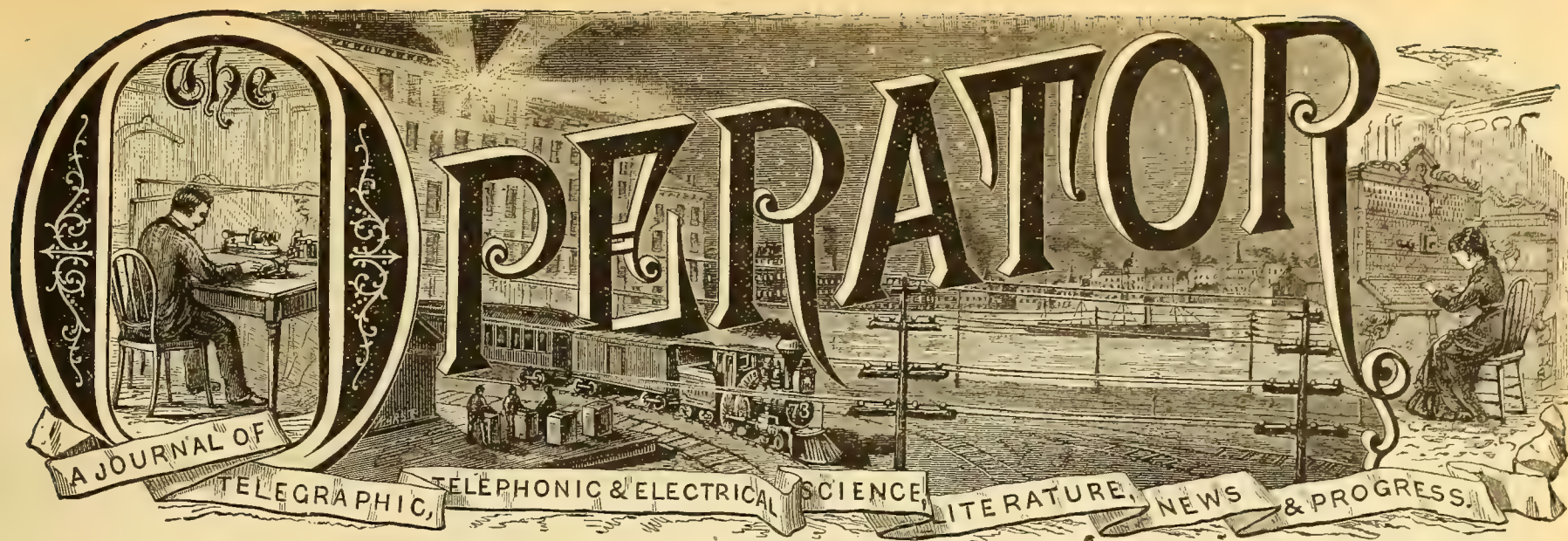
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"Public meetings have recently been held in Kansas City and St. Joe to complain of the abominable management of the Western Union Telegraph Company. The only remedy is a new company; it does no good to complain to a monopoly. It seems reasonable that the business men of the various cities East and West could organize a company, and not only secure reliable telegraph service, but profits as well. The rapidity with which the American Union jumped into favor shows what can be done in this direction."

The following is an extract from a letter from a disgusted citizen, printed in the *Kansas City Journal* of July 14th:

"A large portion of our business is transacted by telegraph, and we have suffered greatly through the inefficiency of the employes of the telegraph company. Complaints to the manager are of no avail, and are not now made use of; we simply bear it, and wait for a chance to grin, meanwhile praying for the formation of a company with lines to Chicago and St. Louis. A large proportion of the capital required to construct such lines can be raised in Kansas City among our business men."

Another letter, signed "Business," printed in the *Journal*, among other things says:

"Utter incapacity and inability to meet the wants of the public have made the use of the wire from this city extremely dangerous in any business where promptness and accuracy are a necessity. I suggest a partial remedy. Let a merchants' telegraph company be formed at once."

The *Kansas City Journal* of July 13 says editorially:

"The people of St. Joe and Kansas City are for once in sympathy. At least there is one subject of common interest in which both take much the same view. A public meeting was held in

that city last week to hear complaints about the telegraph service of the Western Union company. A number of prominent business men spoke of delays and errors which were becoming not only annoying but burdensome, and all attributed the irregularities to the incompetence of employes rather than to the crowd of business or insufficient facilities. There is a great deal of complaint of the kind in this city, but whether the fault is in the local management or an attempt at too much economy on the part of the company, there may be a question. It is certain, however, that the office here is the largest west of the Mississippi, and should have enough first-class operators to receive and transmit messages without delay or error; but the facts are that very much of the business done is decidedly indifferent both in regard to time and manner. If the company will not appropriate sufficient money to pay good operators, then an effort should be made to hasten the building of other lines; if the fault is alone with the management of the office here, the matter should be brought to the attention of the officials of the company. At the St. Joe meeting the manager of the local office admitted the charges, but said after frequent demands the company had failed to give him the proper help to conduct the business of the office as it should be, and stated that the office had recently been changed from the jurisdiction of the superintendent at St. Louis, to that of the superintendent at Omaha, who assured him that he would add to the force there and endeavor to alleviate the complaints."

The same paper of July 14th says, editorially:

"Assurances are given that the lines (opposition) now in process of construction from New York to the West will be extended to Kansas City within another year. The complaint is made by the local management here and elsewhere that good operators cannot be had, while the operators say that the fault is entirely with the company in paying such low wages that good operators are leaving the business as fast as they can get other employment."

We have not room for further extracts, but the tenor of them all is that a live opposition is sorely needed in the West, and that it will be warmly welcomed, both by the public and the operators. In one case, on Monday, the 11th, ult., we learn that some stupid official issued a circular to the customers, stating that thereafter no due-bills would be received at the counter from any individual or company. Several firms offered to deposit \$100 or more, from which the amount of their bills might be deducted each day; but no, "pay each message," was their only answer. Referring to the economical manager's plea that he cannot get good operators, we may quote from a private letter:

"Operators that get \$55 and \$60 here go to Chicago at \$70 and \$75. The 'extra' here is computed at nine hours per day, and at the salary rate—that is, if you get \$50 per month, and work three days extra, you will receive

three days' wages at the rate of \$50 per month. Now, what operator will willingly stay in a third story, weather "at par," and work for from 12 to 29 cents per hour, after a hard day's work? This office is the largest "roast" for operators of ability that you can find in the States, and they pay the smallest salaries. The best operators get \$75 per month—if they stay long enough—and when there is a rush of overland business the way the two or three \$75 men are put to the front causes two or three resignations. Why? 'Oh, I can get \$95 in Chicago by working a little extra, and not near such hard work as this.'"

These facts are somewhat crudely put together, but the controlling idea is there: skinflint policy, poor pay, bad work, loss of custom, new company, collapse. It is not very unlikely that a local company will soon string a wire or two between Kansas City, St. Louis and Chicago, to connect with the nearest opposition.

All this foolishness is creating havoc with the business, and will eventually, if permitted to go on, undo the good work of General Eckert and those immediately connected with him. We have some other well fortified cases which should be looked into; and if any "manager" feels that he has thus been sacrificing himself upon the altar of economy, it behooves him to cook up his array of excuses. Kansas City is not the worst telegraphic hole in the country.

### The Telegraph Litigation.

With the settlement of the Williams and Hatch suits against the consolidated Western Union, it was generally believed that the legal troubles of that company had come to an end. Much surprise was, therefore, caused when, on the 15th ult., it was announced that another injunction had been granted, on the application of Jenkins Van Schaick, one of the witnesses in the Williams suit. The averments were substantially the same as those in the Williams and Hatch suits. Upon that day, July 15th, the Western Union had publicly announced its intention of paying the dividends. A large number of stockholders were already paid before the injunction was served, but after that no further payments were made. The effect of the injunction was to stop the payment of dividends on even the old original stock of the company for the reason that the new stock is in the hands of the general public, and many persons hold shares of both the old and new issues. The stockholders' checks, drawn against the Union Trust Company, do not designate the shares by their certificate numbers, and it was therefore impossible to distinguish between the old and the new. The order was granted by



Justice Joseph F. Barnard, in the Supreme Court at Poughkeepsie. It restrained the payment by the trust company, as fiscal agents of the telegraph company, of the two quarterly dividends of  $1\frac{1}{2}$  per cent., 3 per cent. in all, due on the extra issue of \$15,526,590 in stock authorized under the consolidation of the telegraph companies. It also restrained the telegraph company from transferring that particular stock on its books.

This would have caused much inconvenience to the stockholders but for the spirited action of Mr. Jay Gould, who promptly announced that he would pay the dividends out of his own pocket. The following note was accordingly sent to the newspapers on the afternoon of that day: In view of the serious inconvenience to many persons from malicious and vexatious suits against the Western Union Telegraph Company, I have arranged with the Mercantile Trust Company to advance to all stockholders of the Western Union Telegraph Company the amount of their dividend, payable this day, upon assignment to me at the office of the said trust company of their right to receive the same. JAY GOULD.

On the following day, July 16, the case assumed a different and more equitable aspect. The Western Union lawyers appeared before Judge Barnard, at Poughkeepsie, producing affidavits to prove that, out of the \$15,526,590 of stock enjoined, \$13,000,000 had already been distributed. They stated further that the telegraph company would enter in any bond or make any deposit Judge Barnard might direct to fully indemnify the plaintiff. They urged that the suit had no foundation, and was only a stock-jobbing operation, precisely identical with the Williams and Hatch suits, which had been decided in favor of the company. Judge Barnard said that at the time of granting the injunction he asked Mr. Sessions, the attorney for Mr. Van Schaick, whether his papers showed that none of the \$15,000,000 increase, or "water," had been distributed, and that Mr. Sessions said he knew it to be a fact, and that his papers showed that not a dollar of the increased capital stock had been distributed. Judge Barnard said it was only on the faith of these representations that he granted the injunction. He thereupon made an order vacating the injunction and directing a hearing in the matter to take place on July 23, at Poughkeepsie.

The spectacle of a judge admitting the weakness of a case by vacating his own injunction within 24 hours after issuing it showed that no serious consequences to the monopoly would follow. Judge Barnard's plea that he was misled by Van Schaick's counsel stands for nothing, since it was just as illegal to pay out a thousand dollars in dividends as to pay out thirteen millions of dollars, and just as illegal to pay out any portion of thirteen millions of dollars as to pay out the whole. If the injunction ought ever to have been issued to stop the payment of dividends at all, it ought to have been issued to stop the payment of them at any stage of the operation. If the company had illegally paid \$13,000,000 out of \$15,000,000 when the injunction was served, the injunction ought to have stopped the illegal payment of the remaining \$2,000,000.

On the 23d ult., the day set for argument, the matter did not come up, as Mr. Jenkins Van Schaick and other interested parties had consented to a vacation of the action so far as the injunction was concerned.

On the 20th ult., in the Superior Court, Judge Charles H. Truax handed down a decision against Messrs. Rufus Hatch and William S. Williams, assessing them \$2,000 each for the luxury of an unsuccessful suit against the consolidation. This is as it should be, and if the Court will now assess Mr. Van Schaick \$2,000 for his silly performance, these men may find it more profitable to devote their energies to the establishment of a good, reliable opposition rather than to the devious ways of our law courts.

Thaddeus Poucher, now living in Oswego, this State, says he helped to set the first telegraph pole ever raised in the world. It was picked from a pile of ordinary hop poles and was one of nine which Mr. Morse used to hang a test wire upon which ran from his house to his barn, near Poughkeepsie.

## Notes and Queries on Electricity and Electro-Magnetism and Their Applications.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 144. What electrical tests should telegraph wire be required to pass?

A. Electrical tests are more especially necessary when the wire is to be used on long circuits. The electrical properties of wire have been found to vary considerably, and frequently the strongest and most ductile wire, or that which tested mechanically is the best; when electrically tested, is found to be much inferior for telegraphic purposes to other wires by no means so good otherwise.

The only test much used, however, is for resistance. The ordinary practice in this country is when ordering wire to stipulate that the resistance of the wire in ohms per mile, at 60 degrees Fahr., must not exceed the quotient of the number 5,500 divided by the weight of the wire in pounds per mile. For example, if we order No. 12 wire and assume the weight to be 165 pounds per mile, to find out what resistance we require, we divide 5,500 by 165. Finding the quotient to be  $33\frac{1}{3}$ , we order No. 12 wire, 165 pounds to the mile, and with a resistance not higher than  $33\frac{1}{3}$  ohms per mile. Similarly, a wire No. 9—which we will call 325 pounds per mile—should have a resistance not greater than 5,500 divided by 325; viz.,  $16\frac{2}{3}$  ohms.

Q. 145. What is meant by the "killing" of wire?

A. It is a term much used in England, where it is applied to the process of stretching the line wire in a cold state before stringing it. The average amount of length gained by thus stretching should be two inches in every hundred. The purpose of the operation is not to increase the length of the wire, but it is that weak places, caused by bad joints, bad welds or other imperfections, may be detected and the wire broken before it is strung; avoiding thus the annoyance of subsequent breakage and the trouble and delay attending the necessary repairs. Not only are these weak places detected by this process, but the small bends and wrinkles existing in ordinary wire are straightened out, the wire is rendered less springy, more manageable, and has much less tendency to cross with other wires when acted on by the wind. The method of killing is by Mr. Culley described in the following words: "The wire should be laid out at the feet of the poles, drawn as tight as possible by ropes and blocks, and then pulled at the centre of its length, at a right angle, till it stretches. It will be found to have lost its spring and to lie on the ground as if it had been killed."

Q. 146. What is meant by the term "galvanized wire?"

A. When we speak of "galvanized wire," we mean nothing more nor less than zinc-coated wire; and the term galvanization is sadly misapplied when so used. But the expression has, by constant usage, become so firmly fixed in the telegraphic profession, that it is hopeless, at this late day, to attempt its abandonment.

Telegraph wire is nearly always galvanized, in order to preserve it from destruction by the oxygen of the air. If not so protected, the wire is eaten away by rust very rapidly. When properly applied, the zinc coating is very effectual in preserving the iron wire from oxidation, and this it accomplishes in two ways: First, by acting as a mechanical covering and protection for the iron wire. Secondly, by its electrical qualities being more electro positive than iron; that is, having a greater affinity for oxygen than iron; when associated with it, the iron is protected from the action of the oxygen, at the expense of the zinc. But when the zinc is attacked by the atmospheric oxygen, it is converted into oxide of zinc. This, not being soluble in water, remains on the wire, and so protects it from corrosion.

In the vicinity of places where much coal is burned, however, the air is heavily charged with sulphurous acid gas, which transmits the oxide of zinc into sulphate of zinc, and this salt being readily soluble in water, soon is washed away, leaving the iron unprotected. This is the reason that iron wire in the vicinity of large manufacturing towns so soon rusts away. If it can be done, it is a very good plan to paint wires in

such localities. Galvanizing is now performed in a much more effective and efficient manner than it used to be; and as the wire is by the same process annealed, its mechanical qualities are left comparatively unimpaired; still the iron is by the process made a little harder.

Q. 147. What are the different styles of line-wire joint or splice in general use? how are they made and which is the best?

A. The joint in general use in America is the common twist joint. The Britannia joint is also used in England, and a peculiar joint, in which both wire ends are twisted together round each other, is used in France. A joint which should never under any circumstances be used anywhere, is the "bell-hangers' joint."

In describing how they are made, we will take the last first. The bell-hangers' joint is made by simply hooking the two wires together and bending back the ends. No telegraph man using this, even as a makeshift, can hope for success.

The French joint is made by laying the ends to be spliced together for about six inches, a particular form of hand vise is then screwed to each end and the two vises turned in opposite directions, until the ends are completely wound on.

The Britannia joint is much praised by English writers, and from its construction must necessarily be an excellent joint. It is made by bending the extreme ends of the wires short up with the pliers, placing the wires side by side and then binding No. 16 wire tightly around them. The whole is then well soldered. Of course, before making the joint, the ends are made perfectly clean and bright.

The American twist joint, though not a masterpiece of electrical engineering, yet will always maintain its popularity on account of the ease and rapidity with which it is made. In making this joint, after cleaning the ends until a bright metallic surface is obtained, the ends are put together and each one in turn twisted round the other, making the successive turns as close to each other and as nearly at right angles to the line as possible. Make four or five turns, then cut off the ends close to the splice. In the construction of a line nothing is more essential to its success than the perfection of its joints. Not near the attention that the subject deserves has in this country been given to it.

Every joint should be soldered, whether between iron and iron, or between iron and copper. A single defective joint will often exceed fifty miles of line in resistance. A case once fell within the writer's own experience, where a short local line, whose normal resistance was less than 250 ohms, rose to 2,500 ohms. This resistance was located and found to be all in one point, between an iron and a copper wire; the joint was unsoldered.

When a chloride of zinc solution is used for soldering copper and iron, before leaving the joint it should be washed off. It is better, however, in such a case, to use resin as a flux.

## The Atlantic Cable Companies.

The steamer *Faraday*, having successfully laid the first of the American cables, has returned to England and, on the 21st ult., landed the shore end of the second cable at Whitesand Bay, near Land's End, Cornwall. Both of these cables will be working before the end of this year. Siemens Brothers are also now at work manufacturing the third cable for the American Company.

This announcement has been promptly followed by a reduction of rates to 25 cents per word, commencing to-day, on the part of the older companies. A dispatch from Berlin, recently, states also that the United German Telegraph Company has entered into an agreement to use the cables of the Anglo-American Company exclusively, and not those of any other company. Connection will be established with Valentia by wire from Crete, East Friesland, passing through the British Channel and around the west coast of Ireland. Telegraphing to America from Germany will consequently be as cheap as from England.

Then, we learn upon the authority of the



London *Morning Post*, that the Germans will attempt to lay an Atlantic cable of their own. The *Post* says: By an arrangement just concluded between the German Telegraph Company of Berlin and the German Union Telegraph Company an independent cable will be laid from Germany to Valencia, and thence to the United States at a cost of £165,000 (\$825,000). The capital will be raised by an issue of preference shares bearing 5½ per cent. interest. A subsequent dispatch states that the cable will be laid from Emden, Prussia.

This would give us ten cables under the Atlantic, viz.: The Anglo-American, 4; the Direct United States, 1; the New French, 1; the American, 3; and the German Company, 1. As most of these would be duplexed, and as there is certainly a limit which cable business ceases to be profitable, it seems probable that some of the heavily loaded concerns will soon be unable to pay dividends.

When the first line was opened in 1866 the charge was \$100 for 20 words. It was not until some years later that the word rate was introduced. At this rate the daily average number of messages was 29 and the receipts per diem were \$3,785. Three months later the tariff was reduced to \$50 for 20 words, and at this rate the number of messages increased to 64 per diem, while the daily receipts only increased to \$4,340. The next change was made by charging a slightly higher rate, but allowing shorter messages. A message containing only ten words was sent for \$26, and at this rate the number of messages doubled, the daily average being 131 against the former 64. But as these messages were only half the length, the receipts were only \$4,170. The rate was then gradually reduced to \$10 for ten words, but the reduction proved disastrous, the daily number of messages increasing to 226, and the daily receipts falling off to \$3,740. This was in 1869, and in 1870 the first French line was laid. A brisk competition began, and the rate was reduced to \$7.50 for ten words. Business at the time was very active, and the daily number of messages sent across the Atlantic was no less than 452, while the receipts were \$5,655. An amalgamation of the two rival companies then took place, and on Dec. 12, 1870, the rate was doubled. Under the new rate the average number of messages fell off for the first time in the history of cabling, but the receipts reached the then enormous total of \$8,870 per diem. A subsequent reduction to \$10 a message showed a falling off in the receipts, and upon May 1, 1872, the old system of ten-word messages was done away with, and a uniform charge of \$1 a word was instituted. The popularity of the change was at once shown by a large increase in the number of messages. The daily average sprang suddenly from 498 to 646, and the receipts showed an equally satisfactory increase. Those were the palmy days of cable telegraphy, as an experiment which was made during the month of May, 1873, shows. The rate during that month was raised to \$1.50 a word, the daily number of messages being 558 and the daily receipts \$12,000. What a contrast this is to the profits at the present time will be seen when it is mentioned that the present daily receipts are only \$13,075, while the number of messages is about 3,500 per diem!

#### Chicago Notes.

*To the Editor of The Operator:*

SIR: The operators of Chicago (I believe in common with others of the W. U. elsewhere) last pay day, July 15, received, for their faithful services during long hours on the days of July 3 and 4—immediately following the assault upon the life of the President—a benefit, a complete surprise, which was highly and thankfully appreciated. It came in the shape of a shower of greenbacks—"double extra" being paid to the industrious on the dates named. There were also quite a number of operators who had been working for \$70 per month notified that their salaries had been increased to \$80, dating from June 1—they receiving back pay for the intervening time. This, added to the "extra," came as a double surprise to many, and, consequently, exceeding good feeling toward those credited with the kind and thoughtful visitation has been becomingly and generally expressed. The whole affair being so out of the general order of things

marking the past career of the company, we are happier in feeling disposed to look upon it as indicating a policy that is to reach into the future with purposes and endeavors to bestow a just reward upon true merit and faithful performances generally.

Your correspondent is pleased in reporting at this time that the Brotherhood of Telegraphers is in a very healthful and flourishing condition, both numerically and financially, some twenty new members "riding the goat" at our last meeting. The society is popular, because its purposes are praiseworthy; because it contemplates the accomplishment of more benefits, perhaps, than proposed by any of their past unions, but in a manner quite different, because it is free from the possibilities of dangerous rulings to precipitate them and the company into incalculable difficulties; because it is to prove a permanent and constant friend to all worthy members, in life, in sickness and in death.

New arrivals: Miss Clark, Miss Bracken, Mrs. Darrow, J. F. Lilly, Muskegon; Jim Coulter and John Dickson, Bradford, Pa.; George Anderson and Gifford, Milwaukee; Pete Smering, Toney Martha, from Buffalo; Frank Kent, St. Louis, and a number of others whose names we were unable to learn.

Departures: Ed. Ball returned to Indianapolis, Ind.; Ed Dodge somewhere in New York State as station master on N. Y. C. Geo. Hall and W. A. Leary, assistant chiefs, have quit the business, going out West. Perry Chamberlain, on his way to Omaha, paid us a flying visit recently; Sam. O. Bracken has been appointed chief to succeed Chief Leary, resigned; Billy Halligan succeeds Mr. Bracken, John Nestal takes Halligan's N. Y. div., H. R. Clark has been appointed chief of the checks, vice McM. resigned.

#### Topeka (Kan.) Notes.

*To the Editor of The Operator:*

SIR: Since my last the following changes have taken place among the telegraphic fraternity in this city: Mr. W. B. Paddock, who for two years has been press operator at the Western Union office, resigned on June 1st to accept a position with the A., T. & S. F. R. R., at this point; Mr. R. M. Elliott, of St. Louis, is his successor. Mr. J. D. Gibbs, an artist of the highest order, is an addition to the W. U. force. Mr. Lester G. Brewer, late Board of Trade operator, has accepted a position with the W. U. at Kansas City. Mr. Geo. C. Sperry, for a long time operator in the general offices of the A., T. & S. F. R. R., has been promoted to the position of stenographer to Mr. R. B. Gemmell, the popular Superintendent of the above road. Mr. Sperry was succeeded by Mr. C. P. Forman, of the A., T. & S. F. depot office. Mr. Frank Mullen, late operator at the A., T. & S. F. machine shops, has been transferred to that company's lines in New Mexico, and his place here is now occupied by Mr. Wm. H. Mayer, recently from one of the New York elevated roads. Mr. A. W. Parks, for some time manager at the A., T. & S. F. depot, has been transferred to that company's office at Newton, Kan., vice Mr. W. J. Ross, who assumes Mr. Parks' duties here. Mr. M. J. Nichols, of the Union Pacific depot, has resigned to accept a more lucrative position as clerk in the freight office of the same company. Mr. W. A. Campbell, late of Wamego, Kan., succeeds him as operator. Mr. J. W. Walker, night operator at the M. P. depot, has been transferred to Wallace, Kan., and his place here is now filled by Mr. J. F. Cunningham, recently from the W., St. L. & P. R. R. KANSAS.

#### Alexandria (Va.) Notes.

*To the Editor of The Operator:*

SIR: The W. U. is now doing a splendid business here. Owing to reduction of rates, and the increased prosperity of the town, the number of messages handled daily is more than double that done two or three years ago. As there are ten tables to watch, customers' counter and delivery department to attend to, some fifty-odd wires to test, commencing at 6.30 A. M. and lasting all day, and about 150 to 200 messages per day to handle, Mr. Gentry, the manager, has fully as much to perform as any one man would like to undertake. The Va. Mid. R. Co. is doing a large business now. Mr. J. Fisher, superintendent of telegraph and master of trans-

portation, has the affection of all his employes from Washington, D. C., to the North Carolina line. He is ably assisted here by Messrs Dinwiddie, chief, and Peyton, Smithers and Buckley, dispatchers. Their office is very uncomfortable and considered unhealthy. Mr. Dinwiddie has just recovered from a severe illness. Mr. Buckley is now sick in bed with malarial fever; Mr. Pierce, from Lynchburg, substitute. Mr. Smithers, a handsome man of 200 lbs. weight six months since, has also secured a leave of absence to recuperate. He now weighs only 150 lbs.; Mr. Rohr, from Lynchburg, substitute. The B. & P. R. Co. have at their local depot Mr. Barnes; at St. Asaph Street Junction, Messrs. Duncan and Givens; at Long Bridge, Messrs. Peverell and Duncan. The W. & O. R. R. have in their superintendent's office Mr. W. A. Macomb of Georgetown, D. C. The W. U. has at Partner's Brewery Mr. C. Valer, from Germany, and at "Fishtown" office E. R. Lowe. There are no unemployed operators in hearing of this place. "THE WHAUP."

#### Buffalo (N. Y.) Notes.

*To the Editor of The Operator:*

SIR: The organization of our men into a protective union was effected late in June, with twenty-one members. We now number fifty, out of an office force of less than seventy-five; the remainder of whom, together with a hundred or more branch and railroad operators in the neighborhood, we shall soon enroll. We are also establishing branches throughout Western New York. The sentiment in favor of the movement is lively, and though the work is rapid, it bears no evidence of being superficial. The officers at this city are as follows: J. H. McMahon, Chief; O. J. Begley, Vice-Chief; W. G. Patterson, Secretary; A. N. Gardner, Treasurer.

Our secretary would be pleased to communicate with the organizations in other cities throughout the country as to progress, sentiments and prospects.

Business is booming in the office, and the "extra" force is correspondingly large, most of the men doing double duty. Mr. A. J. Gallagher has resigned to accept work elsewhere. Mr. P. Smering has also resigned and gone to Chicago. We hear that Messrs. Watts and Roesch leave us on the first. They are Union men and we regret their loss. The arrivals are Messrs. Prentice, from Chicago; Tom Henning, formerly employed here; Remy, from everywhere; Ryerson and Goodell, "extra," and John M. Mayo from New York. A number of the boys have recently applied for increased salaries; in most cases being just demands they will probably be acceded to. "BU."

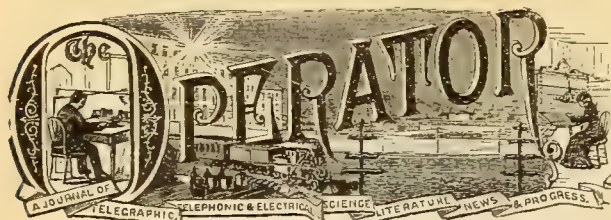
#### Portland (Me.) Notes.

*To the Editor of The Operator:*

SIR: The summer business has started, and again the tourist is seen wandering through our beautiful city. Telegraphically, business is good. Our day force is three operators less than last year. Several Eastern offices have been put on a through circuit to Boston, somewhat reducing the work, which had heretofore been repeated. The old time operators are still to be found on duty, so it will not be necessary to name the force. Howard A. Black, formerly our third man on Boston quad, has had a very severe attack of rheumatism. He has been confined to his bed at his home in Calais, Me., for the past three months. Last accounts report him better. A. G. Saylor, one of our quad operators, was married a short time ago, and made a trip through the mountains. He returned after a very enjoyable tour, looking hale and hearty. He has the well wishes of us all. O. J. Neff was in the city a few days ago. It is rumored that he is connected with the Mutual Union, who expect to open here by Nov. 1. We hope the rumor may prove true. H. C.

One of the telegraphers who carried a telegram to the President was asked by him if there had been many dispatches received that day regarding his misfortune. The operator replied: "Yes sir, quite a number expressing sympathy for you." The President responded, good-humoredly, "Excuse me for correcting you, but 'sympathy with me' would be better. Be careful of your grammar."





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### WHO IS RESPONSIBLE?

Notwithstanding the explicit denial of certain officials high in office, it is still plainly hinted by our correspondents that various local superintendents, south and west of this city, have been, or are now, reducing salaries, either directly by a sweeping order, or indirectly by increasing the hours of labor or by discharging old hands to make room for new men at lower salaries; and that, too, seemingly, without sanction from headquarters.

From these conflicting statements—the alleged sufferers on the one side and the aforesaid officials high in office on the other—many inferences may be had, some of which we shall enumerate.

First. We might infer that the hereinbefore-mentioned officials high in office are quiet, easy-going gentlemen of a peculiarly guileless and childlike nature, too unsuspecting and altogether too utterly utter to perceive wicked doings right under their very noses. We can dismiss this theory at once, so far as it affects General Eckert, since his great reputation as the telegraphers' friend has been too dearly bought to sacrifice it now in the full meridian of his success.

Second. We might infer that the understrappers in question are playing an uncommonly fine game on their superiors by taking the responsibility on their own shoulders and making capital for themselves by a general showing of "reduced expenses," without saying a word at headquarters about reductions of salary—all of which is contrary to the implied and expressed wishes of Gen. Eckert. This may be true of a good many, but we must, in view of recent events, take Chicago from that list. The managers there seem to read the handwriting on the wall about as well as anyone.

Third. Since it has become a question of veracity, we might infer that the whole thing is an organized and wicked attempt on the part of certain depraved correspondents and newspapers to belittle the new management, and to bamboozle *THE OPERATOR*. In that case we should have to produce our list of alleged victims, and, of course, hear from them further. But we have trusted, and been trusted by, "the boys" too long to admit of that theory; we hold too much in common with them, and have battled side by side with them too long to mistrust them.

But if, after all, the stories be true—that is, if the said local officials have, since the consolidation, cut down salaries or increased hours of labor unreasonably, as is alleged on the one side and emphatically denied on the other—the sooner they are removed from office the better it will

be for the general service. Men whose selfish zeal for official recognition so far outruns their natural store of discretion as to lead them to alienate the loyalty of subordinates from the company, or to endanger its public patronage, were intended by nature to adorn a detective agency, or to shine as sheriff's constables, and they are altogether out of their sphere when trying to act as telegraph officials. Surely the proud consciousness of true manhood which is believed to swell every American breast until it assumes the beautiful curve of the dove's must be oozing out, when, in this great country, the saying is verified that "Thrift follows fawning;" when pettifogging officials, ignominiously crawling from danger, can be found willing to hack away at the miserable pittance of their fellow man, in the selfish hope of obtaining thereby some unmerited preferment which they could not otherwise obtain.

This question has been forced upon us, first by the asseverations of presumably reliable persons, and afterward by the emphatic denial of other persons high in office. We have commenced with Kansas City, and will take up other proofs subsequently. The charges are either true or not true. If false, we shall be the first to denounce those who may have sought to mislead us. If true, the remedy should be applied at once, and no true man will be sorry when General Eckert sits down—hard—upon the devastating policy of those sub-officials who have no higher object than to "make a good showing" financially.

THE British postal authorities, in reluctantly acceding to some of the demands of the operators, seem inclined to deny, with characteristic stupidity, the right of their employés to agitate any question of redress. The government's last manifesto, after stating that "my Lords accept the proposals which you submit to them for improving the pay and general position of the telegraphers and sorting clerks employed in the service of the Post-Office in London and in the country," proceeds:

"But my Lords cannot shut their eyes to the means by which the claims for this improvement in the terms of service have been urged upon the government by a part of the officers interested. Admitting, as my Lords do, that when discontent is shown to prevail extensively in any branch of the public service, it calls for attention and inquiry, and so far as it is proved to be well-founded, for redress, they are not prepared to acquiesce in any organized agitation which openly seeks to bring its extensive voting power to bear on the House of Commons against the Executive Government, responsible for conducting in detail the administration of the country. \* \* \* \* My Lords, therefore, reserve to themselves the power of directing that the execution of the terms agreed to in the preceding part of this letter be suspended in any post office of which the members are henceforth known to be taking part in extra official agitation." Since our English professional brethren have made their point only by the power of their admirable organization and discipline, it is not likely that they will be intimidated now by this threat on the part of her majesty's government. They have proved that in union there is strength, and the government in this remarkable document admits the strength of such a union, so that when the operators next have a grievance, it is rather too much to ask them not to resort to "organized agitation." The coolness of "my Lords" is decidedly refreshing.

At a meeting of the managers of the newly formed Mutual Union Telegraph Company, held in Boston, July 27, it was decided to open offices at once in all the principal cities between Boston and Washington for the receipt and transmission of public messages. It is expected that business will be commenced within about a week, and that the company's lines to Chicago and other Western cities will be completed by Sept. 1. The line has been reported to be in good working order, and nothing remains to be done except the stringing of wires from the different offices selected to the main line. The Mutual Union has been conducting its work so as to attract as little attention as possible, and has completed its Washington-Boston line without becoming entangled in the network of law-suits which was thrown around the American Union in the days of its infancy. The progress of the new company through New Jersey—that battle-ground of competing telegraph interests—was accomplished, says the *American Exchange*, by the construction of lines by a local company, which subsequently sold out its rights and property to the Mutual Union. In this city peaceful entrance and establishment were secured by the making of a contract with the city authorities for the maintenance of the telegraph line of the municipal fire department at the expense of the Mutual Union, in return for the privilege allowed the company of placing its wires upon the department poles. In fact, the shrewdness, skill and effectiveness with which the Mutual Union has so far conducted its operations augurs well for the future development of its system, and the efficiency with which it will serve the public. By the first week of the present month it is expected that the company's lines will reach Buffalo and Pittsburgh, and by September it is hoped to have them extended to Chicago.

THE action of the Western Union in recognizing in a most substantial manner the willing earnestness in which its operators have responded to the extra call on their abilities consequent upon the attempted assassination of the President, should be warmly commended. We learn with pleasure that, during the past month, in the Chicago office, a number of \$70 men have had their salaries increased to \$80, in addition to all the operators there being paid double rates for extra services performed during the excitement and rush following the assault upon President Garfield. This action may well be held up to the managers of some other large offices, in at least one of which we will guarantee—if the General Manager will look into the matter—to point out where, by an extra expenditure of \$200 or \$300 per month in salaries, the business can be greatly increased and the public infinitely better served, all of which will ultimately be a "saving" to the company. As a matter of fact, every sensible manager knows that strictly first-class men cannot be had for \$75 per month, if indeed the supply can in any event meet the demand. Furthermore, the company can well afford to pay enough to secure good men, since, by its own reports, it appears that its receipts for July show an increase of a quarter of a million of dollars over the same month of last year, while in the New York office alone the number of messages per day has increased by 15,000. Some of our penny-wise superintendents may find food for profitable reflection in these figures, in connection with the just and timely action of the Chicago managers.



IN anticipation of the coming competition of the American Cable Company, the Anglo-American, the Direct United States, and the New French Cable companies reduce their rates to-day to one shilling (25 cents) per word. English, French and American Government messages will be transmitted at half rates, and press messages between 6 A. M. and noon, Greenwich time, sixpence (12½ cents) per word. This is a great change since the time when no message was sent for less than one hundred dollars, and it remains to be seen whether or not the change will be beneficial to the companies. A careful analysis of the business during the past eight years shows that when a charge of \$1.50 per word was made the average number of messages per day was 588, and the average daily receipts were \$12,000. At \$1 per word the number of messages per day was increased to 762, and the daily receipts were decreased to \$10,220. The charge of 75c. per word ran the number of messages up to 1,305, and the daily receipts down to \$9,550. The 50c. rate was worse, for with 917 messages per day the daily receipts were only \$5,915. The shilling or 25c. rate increased the number of messages per day to 1,678, but decreased the daily receipts to \$4,435. From this showing it seems clear that the 25c. rate has not paid in the past, and that for a long time to come the public will be the only gainer by this decrease in tariff.

THE Postal Telegraph Company, recently incorporated under New York laws, with a capital of \$21,000,000, completed its organization on the 22d ult., at the office of James R. Keene. The promoters of the enterprise are reticent in regard to the plans of the company; but it is understood that many leading capitalists and telegraph men are interested, and that within a short time the scheme will be launched under favorable auspices. The company claims to embrace all the modern improvements in telegraphy and wire, and by the new automatic system to be able to compete successfully with the present monopoly. It is stated that James R. Keene is to be President of the company. The Board of Directors will include John Mackey, of the Comstock lode, and other well-known California capitalists. George D. Roberts is also largely interested. The money, it is asserted, is already subscribed. The lines are to be constructed on a pure cash basis, and will be furnished with all the modern improvements. It is intended that it shall include every paying point covered by the Western Union line.

NEXT to the rapid growth of a young though vigorous opposition, that great telegraphic anachronism, the Western Union, is most threatened by a want of friendliness on the part of some of its present connecting systems. Foremost among these is the Baltimore & Ohio Railroad, the telegraphic system of which has always heretofore been placed at the conditional disposal of every corporation which, from time to time, has entered the field in opposition to the great Western Union monopoly. Everybody remembers the Aladdin-like change when the Western Union suddenly gave way on the Baltimore & Ohio, a short time ago, to the magical shield of the once glorious American Union. Since then new combinations have been made, but the Baltimore & Ohio has again shown a commendable desire to be free from any monopoly, and the ensuing controversy bids fair to result in the absolute and separate maintenance of the Balti-

more & Ohio lines as an opposition to the present Western Union organization.

IF Mr. Edison intends, as he now promises, to illuminate 500 houses in this city with his electric light by the 1st of October, the gas companies do not seem to be scared. It has been recently shown that New York now pays two and two-third times as much for gas as London, two and a-half times as much as Ghent, twice as much as Amsterdam, Berlin, or Brussels, and half as much again as Paris, Lyons, or Marseilles. While coal sells for five dollars a ton in London, and four dollars in Philadelphia, the price of gas in the latter city is three times what it is in London. Here, then, would seem to be a fine field for some acceptable substitute for gas, and yet Mr. Edison and his brother inventors do little more than talk.

FUN may occasionally be extracted from the dry files of the Patent Office. Looking over a package of old patent specifications, a few days ago, we came across one for an electro-magnetic dental instrument, the patentee of which bore the too suggestive name of "Yanker." The eternal fitness of things was never more clearly manifested. Similar to the above is a specimen taken from the last *Gazette*, in which a man named "Smokey" took out a patent for a new kind of suspended lamp. In the same issue a new jail or prison was patented and assigned to J. R. Ketcham. Verily, truth is stranger than fiction.

THE rapid growth of the telephone business has prompted some capitalists in France to start a new weekly paper in the interests of the telephone. The new paper is published in Paris, and is called *Le Telephone*. It is intended, apparently, to fill a place in French telegraphic literature which is so satisfactorily filled here by the "Telephone Department" in *THE OPERATOR*. While we doubt the wisdom, at present, of floating a paper devoted exclusively to telephony, its work, while it lasts, will be keenly appreciated, and we wish *The Telephone* all the success which it deserves.

THE meeting of the "Old-time Telegraphers" at Niagara Falls, on the 20th of next month, should be well attended, and, if we may judge from the re-union at Cincinnati last year, it will be a most enjoyable affair. We believe there was a balance of \$390 remaining after paying the expenses of that reunion, so that the committee now have a fair start in the matter of expenses.

THE proposal to locate the bullet in the President's body by means of Prof. Bell's improvement on the induction balance has every reasonable chance of success, and, if successful, will be a great triumph of electrical skill. There would seem to be no end to the uses to which the telephone may be applied.

THE Mutual Union all ready for business; another formidable opposition company with a capital of \$21,000,000, backed by well known capitalists and telegraph men; a disposition shown by the Western Union to increase salaries. The future for telegraphers does not look quite so unpromising as it did a few months ago.

OWING to a disappointment in receiving the biographical notes to accompany the portrait intended for this issue, we are compelled to postpone the publication of the portrait.

### Answers to Correspondents.

W. T. C. wants to know why his twenty-five mile telephone line often crackles so dreadfully and how the trouble can be remedied.

In an article on the "Enemies of the Telephone," by Mr. Lockwood, published in *THE OPERATOR* of Jan. 15, 1881, the subject is thoroughly canvassed. The nuisance is caused, under the conditions stated by our correspondent, by atmospheric and earth currents, which are usually at their height in the afternoon.

We recommend that W. T. C. change his ground connection at one or both ends of the line; that the ground connection be made as good as possible; that a careful lookout be kept for bad joints, and that no other wires be grounded on the same plates or pipes.

He might also try a shunt of high resistance branching to earth. If, for example, he could connect a wire having a resistance coil in circuit of 2,500 ohms permanently to the line, it would, very likely, relieve him of considerable of the trouble. The whole business of telephonic interfering troubles is still rather mysterious and its remedies very uncertain. Only experience can be depended upon for absolute relief in this matter.

WEB, Mercer, Pa.—Mr. J. B. Taltavall, of the New York Associated Press office, this city, is Secretary of the New York Telegraphers' Mutual Union.

SUBSCRIBER, Chicago.—The Blanchard Foods, referred to in last issue, are advertised in *THE OPERATOR*. Write to the company for a circular.

X., Lexington, Ky.—Books of instruction in stenography, or on any other subject, can be ordered of us, and will be mailed, postage prepaid, on receipt of regular publishers' price. It would be well for telegraphers to remember this. The price of Ben Pitman's system, bound in cloth is \$1.00; "American Manual of Phonography," with copying books, \$1; "Telegraphy," \$1.25; "Munson's Complete Phonography," \$2. The length of time required to learn altogether depends, as in telegraphy and everything else, upon the aptness of the learner and the amount of practice he gets. A few minutes a day, however, will soon make one a very fair stenographer.

Y., Augusta, Ga.—The re-issued Page patent covers broadly the combination of an electro-magnetic armature and adjustable retractor, as well as adjusting or regulating the vibrations of the armature of an electro-magnet by means of a set screw, "or any mechanical equivalent for substantially the same purpose." As these devices constitute an essential part of almost every telegraphic or electro-magnetic apparatus in existence, for whatever purpose it may be used, the re-issued patent, if valid, practically places the business of telegraphy in this country in the hands of the Western Union, of which company it is the property. The Western Union make a practice of bringing suits under the patent against every new telegraph company that starts, apparently for the purpose of worrying them, but the suits do not come to trial—for the reason, those who are unfriendly to the Western Union say, that the courts would not sustain the re-issued patent if it came before them properly defended.

THE message of the Chicago operators, congratulating the President upon his prospects of a speedy recovery, was an excellent and patriotic document.



## Students on the Erie.

To the Editor of The Operator:

SIR: Please allow me to call the attention of Supt. W. J. Holmes, of the Erie Railway, to the fact that there are on his division, between Utica and Corning, upward of a dozen offices where students are taken; one especially—that of Liberty—where the manager has built a line from the Western Union office around town, turning out five or six manipulators of the key yearly, for which I am informed he receives a handsome income. You will find students in nearly every office on this division. At Livonia, Savona and other places the operators have apparently gone into other business, as they are scarcely every heard on the wire, and men in this office are forced to repeat business three or four times and then they will very likely call you up for it again after it has been filed away.

I know these are strictly against Mr. Holmes' instructions, and that should he be aware of these facts, such a nuisance would not be allowed to exist.

BUFFALO, N. Y., July 16.

"REFORM."

## The Life of an Electric Lamp.

To the Editor of The Operator:

SIR: I notice an article in your last issue by W. H. Preece, on "Recent Advances in Electric Lighting." He says that Sir William Armstrong can only keep 37 lamps going, Lane Fox could only show 12 lights. Professor Adams could only produce from the most powerful dynamo-electric machine by calculation 140. It seems to me that if the dynamo-electric machines were multiplied on one conductor, with their poles properly arranged, this would solve the difficulty. That is to say, if 50 machines were placed on a conductor large enough, the result would be—taking the 100 light machine as a standard—that we would get 5,000 lights from it. If this holds good, then the only limit would be the power of the steam engine driving the machines and the size of the conductor. OLD LINER.

NEW YORK, July 18, 1881.

## TELEPHONE DEPARTMENT.

The Portland, Me., exchange is very highly spoken of by visitors. Mr. Farnham, the manager, is an excellent electrician.

No fewer than 30,185 of the Giltland magneto bells are now in use, 2,810 being shipped in July. These figures show their remarkable popularity.

Walter Norman is languishing in jail in this city for stealing thirty-six miles of telegraph wire, the property of the Metropolitan Telephone Company.

The Ypsilanti, Mich., exchange has 55 subscribers and will soon have a wire connecting it with the Ann Arbor exchange. Mr. Clark Cornwell is the manager.

A telephone cable was laid across the Hudson River at New Hamburg, July 23. Communication will thus be made between Newburg, Fishkill and other places.

The Topeka (Kan.) Telephone Exchange Company, Mr. E. L. Smith, Manager, is one of the best conducted in the West, and its patrons are universally satisfied with its working. It now has one hundred and sixty subscribers, and employs three operators, namely, Miss Libbie E. Duncan and Mr. Harry A. Smith, days, and Mr. Ed. P. Crawford, nights.

The cable of Mr. P. B. Delany, recommended in Mr. Pope's report read at the Chicago Convention for its simplicity and cheapness, has now been patented. The cable consists of a lead tube, flattened out and containing insulated wires inserted inside. In the manufacture the cable is passed between corrugated rollers, which press the lead close around the insulated wires. The lead tube is connected to the ground, and at junction the wires are crossed to avoid induction.

Mr. Eugene F. Phillips, of Providence, R. I., has issued invitations to his third annual social gathering of telephone and telegraph men, to partake of a Rhode Island clam dinner, on Saturday, August 6. These clam dinners have always been exceedingly enjoyable affairs, and will doubtless be no less so this year. The committee of arrangements are Messrs. J. W. Duxbury, Providence; H. B. Lytle, Boston; Henry W. Pope, New York, and Wm. H. Sawyer, Providence.

The proposition to establish telephonic communication with the bullet which has not yet been extracted from the President's body may please the scientists, but tender-hearted, unscientific men will regard it with positive horror. It is exasperating enough to talk through one of the things, when there is a sentient being at the other end of the wire; but to stand yelling "hello" to a bullet, and waiting for an answer, would be simply maddening. The President ought not to be subjected to any such intolerable anguish.—*Detroit Free Press.*

The Telephone Despatch Company, of Boston, has just tried an experiment in aerial lines which may be important in its results. A pipe of galvanized iron has been suspended from a strong strand, consisting of three large wires, for a long stretch of upward of 500 feet, and in it are to be placed about 150 covered copper wires. If the experiment proves successful, we may hope to be able to dispense with many of the wires that now radiate from the roof of every telephone office.

In connection with the rapid multiplication of Atlantic cables, it has been suggested that the cost of cabling may be reduced by adopting the use of the telephone. Certain experiments have already been made between France and England, with fairly satisfactory results. But any communication across the Atlantic is in the present state of science impossible. In cabling the opposition increases as the square of the distance, and the utmost that the cable between Europe and America can do is to give eight vibrations. A sound consisting of eight vibrations is inaudible, the faintest sound which the human ear can hear being one of sixteen vibrations when made in an organ pipe. Hence it appears that there is but little hope of reducing the cost of cabling by any use of the telephone.

Edison has great faith in the eventual success of long-distance telephoning, and expresses the belief that before many years have passed, a politician at Washington will be able to make a speech to an audience in Albany. It may be a long time before telephoning is brought to such perfection; but the world moves. Our grandfathers would have scouted the idea that we should ever read in our New York afternoon daily journals the same day's news from all parts of the Old World, flashed under the ocean through the cable. Who shall say that our great-grandchildren may not see the time when the American modistes will be inquiring from their Canton correspondents, through the telephone, the latest fashion in Chinese pigtails; and when the President of the United States, at Washington, will be enjoying a morning chat with his dear brother of all the Russias, at Constantinople?

A Frenchman has invented an ingenious method of keeping coffee at a proper temperature, it being well understood that over-heating spoils its aroma, while under-heating gives it a stale taste. The inventor immerses in the coffee a mercury thermometer, open above, and containing a float connected rigidly with a metallic needle, the other end of which moves on a dial. As the normal temperature of the coffee may vary between 85° and 90° C., the part of the dial between these terms is made of ebonite. Should the needle pass beyond them in either direction, electric contact is made and a bell is rung. In one case the heat requires to be intensified; in the other to be let down. The invention might be easily completed, says *L'Electricite*, by adapting an electro-magnet, which would close a gas-cock when there was too much heat and open it when not enough. A small jet might be kept constantly lit.

A new use has been found for the delicate sensibility of the telephone during the past week or two. In connection with an improved Hughes induction balance—a most delicate electrical instrument for detecting the presence of metals—it is proposed to employ it in locating the bullet in the body of President Garfield. This instrument consists of two short glass cylinders, around each of which are wound two parallel coils of fine insulated copper wire. One coil of each pair is included in a battery circuit, in which there is a clock-microphone. The other pair is placed in a closed circuit with a receiving telephone. The two glass cylinders with their incircling coils may be widely separated. The induction set up in the secondary or telephone circuit is balanced by the reversal of one of the secondary

coils and so adjusted that the induction in one of the secondary coils exactly balances or neutralizes the induction in the other, so that when the ear is applied to the receiving telephone no sound is heard. Now by placing ever so small a piece of metal in one of the glass cylinders, the electrical balance is disturbed and the clock on the microphone is heard to tick loudly, thus indicating the presence of metal.

The telephone was successfully worked last week between Buffalo, N. Y., and Paterson, N. J., a distance of 350 miles. The series of experiments made were conducted by Mr. J. F. Noonan, Paterson Manager Metropolitan Telephone and Telegraph Company, who claims to have discovered a method of adjusting batteries so as to produce good results in communicating over long distances. The Western Union lent a No. 6 wire between the two cities, and connection was made with the Central office in the Buffalo Exchange. Although the results of the test were not wholly satisfactory to Mr. Noonan, enough had been accomplished to show the value of his discoveries and to insure the possibility of long-distance telephoning. Listeners in the Buffalo Exchange could distinctly hear Mr. Noonan's "Halloa, Buffalo," and songs sung at Paterson were recognized at this end, of the line. In talking, the voice could be plainly heard, but the words could not be distinguished amid the heavy sputtering and snapping noises caused by induction from the wires. Telephone men feel confident that, if a wire can be obtained remote from the wires devoted to telegraph business, conversation can be easily carried on under Noonan's method. As it was, the results of the experiments are considered of great practical value.

## DASHES HERE AND THERE.

Western Union stock is quoted at 86 $\frac{1}{4}$ . Last issue it was 91 $\frac{3}{8}$ .

The first message sent over the new American cable was one of sympathy with Pres. Garfield.

Australia is to be divided into meteorological districts, so as to obtain the data for weather telegrams and warnings.

The July issue of the *Illustrated Scientific News* has several interesting illustrated articles, including one on the "Doble Telephone."

The German coal mines have commenced conveying coal to the pit's mouth by electric railways.

It is now four years since, July 30, 1877, the grand switch at 195 was burned, causing a temporary cessation of business.

The Aldermen refuse a permit to the Mutual Union Telegraph Company to set poles in Portsmouth, N. H.

Enterprise and energy climb the steep stairs to the pinnacle of success, while those who have worked for the American Union go up in an elevator.

Philadelphia and New York are connected by more telegraphic wires than any two other cities in the world, and yet all is not brotherly love between them.

Mr. Edison has also been unfortunate in another lawsuit, his appeal in the interference case Maxim vs. Edison, having been decided against him.

A powerful reason why we should all begin the study of electricity is, that in a short time it will surely lead us on to the electrode (elect road). This pun is not patented.

A correspondent in Walker, Tex., says: "For goodness sake, stop, to the best of your ability, the flow of operators to this State. Some of us will have to walk back if it continues."

People dread lightning more than they do intensely hot weather, yet in the United States on two days recently more people were fatally affected by sunstroke than have been killed in this country in five years by lightning.

There are jars enough, and with salt in battery, too, gracious knows, necessary to the proper working of telegraph lines, without the brethren and sistern adding anything thereto—let harmony, or more money, if possible, prevail.

He had come to the town to try and get a position. Seeing him hanging around the superin-



tendent's office, one of the operators asked him: "Have you seen the superintendent yet?" "No," he replied, quietly, "was he looking for me?"

M. Mascart, the head of the Meteorological Office in Paris, has constructed and distributed a set of forms to all the telegraph offices, with the sanction of the Minister of Postal Telegraphy, for recording the observations connected with thunder-storms.

Some gentlemen in London went to see the generator of the electric light. They were told to put aside their watches before they approached too near. This, it seems, was necessary, as otherwise the steel in the watches would have become polarized and the watches spoiled.

Nothing can be accomplished without hard study, and deep thought—unless you have some powerful friend to do the thoughtful for you; whatever ability, or the lack of it you possess, will then make itself readily apparent. Take a look around for confirmation of this.

Tim Lee Sing, a washerman, got a dispatch from Cincinnati, and sent his card back with the answer written thereon in a most superior style of penmanship and excellent Chinese. There is no doubt about the excellence of the Chinese. Every man in the office said it was by far the best Chinese he had ever read. Out of consideration for the Ohioans, however, it was not forwarded in that shape.

This is what the intelligent editor of one of the Atchison, Kan., dailies says concerning the telegraph: Sometimes the charge of battery must be so high that it makes the key hard to work, and in that event the operator gets fatigued in sending long messages, but as a general thing, when all the boys on the circuit are artists in their business, then it is fun. Every now and then some one "breaks in" to "get off" a joke, a yell of laughter flashes over the wires and the next is "go on" or "give us more."

In the Equity Court at Washington, on the 21st ult., Judge James delivered a long opinion in the case of Thomas A. Edison et al. vs. the Western Union Telegraph Company, for an injunction to prevent the company from infringing a patent of complainant for a system of quadruplex telegraphy. Judge James in his opinion sustained the plea of the Western Union Company—setting up in bar the pendency of a similar suit in the Circuit Court of the Southern District of New York—and dismissed the bill.

The reason why combinations against employers are almost invariably unsuccessful is because, while capital has a uniform easily recognized value, the value of each individual struggler will depend, to a large extent, on his natural ability, education and experience; also adaptability for the work engaged in. The only safe rule to go by in our business is to gauge each man at his own estimate of himself. Our well-known modesty will, of course, prevent the figures being put too high.

Information from Ottawa says that a telegraph line has been opened from one end of the Magdalen Island to the other, with six stations, three of them being signal stations. Three more telegraph stations will be opened before fall. The Anticosti land line, 200 miles in length, will be opened by the first of September with nine telegraph stations, four of which will also be signal stations. On the north of the St. Lawrence River the telegraph will be extended to Point Du Monts next year, and will reach Point Neuf Light-house this year. These telegraph and signal stations will be of great advantage to the fishing fleet.

The "Atlantic and Ohio Telegraph Company," the ghost of one of the Western Union's "dummies," went through the farce of an annual meeting, at Philadelphia, on the 21st ult. The following named persons were elected directors: Norvin Green, Augustus Schell, R. H. Rochester, Thomas T. Eckert, John B. Van Every, Henry Bentley, John E. Zeublin, Sylvester S. Garwood and William Carley. The officers elected were Norvin Green, President; Augustus Schell, Vice-President; R. H. Rochester, Secretary and Treasurer.

In Philadelphia the Underground Electric Telegraph Company will soon begin the work of laying telegraph and telephone wires upon Market street, from the Delaware River to the City Hall, on Broad street; also on Tenth and Third streets, to Chestnut. The wires will be laid in a

terra cotta pipe. The specifications given by the Highway Department for laying the pipe in the streets state that they must be in trenches two feet in width and from four to six feet in depth, and that not more than 200 feet of any street must be opened at the same time. Also that the work of laying the pipe must only take place between the hours of 6 P. M. and 7 o'clock in the morning.

The discovery of a portable electric force has caused a great flutter among the aeronauts. Some of them believe that here is discovered the means that shall make ballooning not only a fine art, but an every-day undertaking. It is believed that if a balloon can carry with it in portable shape a reserve force such as Sir William Thomson found in the famous box sent him from Paris, balloons can be fitted up with steering apparatus that will enable the aeronaut to control their passage through the air and go whithersoever he will, rather than whither the wind listeth. A meeting of the Aeronautical Society is to be held forthwith to discuss this new factor.—*London Letter to the Liverpool Post.*

The ubiquitous operator has been making trouble again—this time for a silly postmaster down in Alabama. The operator referred to, writing to the Post-Office Department, says: "The postmaster at this place has refused to forward, and is now holding, a postal card written by me on June 20, 1881. This card was directed very plainly on the address side and written in telegraphic characters, and was simply a business correspondence and very important. The postmaster claims that his authority for holding is that he is not permitted to forward any P. C. which he cannot read." The department sent a letter to the over-conscientious postmaster, with instructions to forward the postal card, and in the future not to be so zealous in the performance of his duty.

St. Paul was yesterday and last night as much isolated from the eastern part of the world as if telegraphic lines had never been heard of. A terrible storm in and about Chicago, and, as we'll as could be learned, extending into Wisconsin, spent, seemingly, a large part of its force in playing havoc with the wires, and, save a few moments yesterday morning, and again for a short time in the afternoon, communication was completely suspended. In Wisconsin a large tree fell directly upon one set of wires, severing them instantaneously. Private interests suffered considerably from the stoppage of telegraphic communication, and one instance is mentioned of a St. Paulite losing \$500 through his inability to notify eastern agents to complete a sale of grain.—*St. Paul (Minn.) Pioneer Press, July 22.*

On July 16 the telegraphers of Chicago sent the following telegram to Washington:

To Hon. Robert Lincoln, Secretary of War,

The Chicago telegraph operators, whose pleasing duty it was to flash to the remotest parts of the country the news of General Garfield's nomination—and who did their work so swiftly that before the official result of the ballot had been declared they had placed in his hands, on the floor of the convention hall, congratulatory messages from distant cities—acquired through their participation in these exciting scenes an interest in the President so warm that, more than others equally patriotic, they desire to convey to the President and his family assurances of their congratulations that so happy an outcome to so great a crime seems now assured, and their trust that the President will be speedily restored to health.

THE CHICAGO OPERATORS.

The San Francisco *Alta California* thus refers to the Chicago operators' telegram of sympathy with President Garfield:

"Clara Morris was a little cheeky in rushing to the front and telegraphing her regrets to Mrs. Garfield; but as actresses are expected to advertise themselves freely, people only smiled. The height of sympathetic grotesqueness is reached by the Chicago telegraph operators, who have thought it necessary to telegraph their sorrow to Washington, with the remarkable explanation that, having telegraphed his nomination all over the country at the time of the National Convention, 'they acquired, through their participation in those scenes, an interest in the President so warm that, more than others equally patriotic, they desire to convey,' etc., etc. Sublime self-conceit of the most diminutive molecules. Next we shall have the corn doctors and

the barbers uniting to testify the unusual depth of their grief, owing to their close personal relations to the distinguished sufferer, having actually rubbed his head and soothed his bunions."

An exchange says: The Sioux and Cheyennes have always been very superstitious about "talking wire," as they call it, and for several years after the Indian war broke out refrained from meddling with the overland line. In order to impress the minds of these wild beings with the mysterious power of the telegraph, a great council was called at Scott's Bluffs, when the line was first built. Two of the great chiefs were stationed at posts in the open plain, between the Chimney Rock and Scott's Bluff, and each sent messages through telegraph operators, which were promptly delivered. Then the chiefs mounted their fastest horses and galloped to meet each other, and asked what the messages were or the words he had spoken to the wire. The result astounded them. They could not explain it, nor has it ever been understood by them, and to this day a telegraph operator or man engaged in the repair or management of the "talking wire" is regarded as a "medicine man" and a person to be let alone. It was to this superstition that Creighton's thirty men owed their lives and exemption from attack.

In our last issue mention was made of the great opposition in Montreal to the proposition to allow the Montreal Telegraph Company to pass into the control of Jay Gould and the Western Union Company. The proposition of Mr. Gould was that the Dominion Telegraph Company, now leased to the Western Union, and the Montreal Company should amalgamate and be leased to the Great Northwestern, whose directors should guarantee the Montreal shareholders eight and the Dominion shareholders six per cent. per annum. On the 16th ult., an application for an injunction to prevent the meeting of the shareholders of the Montreal Telegraph Company was not granted, so far as the meeting was concerned, but an order was issued to restrain the officers from executing the proposed contract until a further hearing could be had. The meeting of shareholders was therefore held, and a resolution was unanimously passed in favor of accepting the proposals made for working the lines of the Montreal company by the Great Northwestern company under a guarantee of the Western Union company.

When advanced thinkers and writers are devoting considerable time to a rearrangement of our present incongruous system of spelling, perhaps it will not be well to be too severe on those who show such originality of thought, as appears from the following:

This gentleman sent his message to "peat mccooy," tacked an extra e to "Hee," and signed himself "james." The next one was financially afflicted, and made his want known by the characteristic request: "i neade muny at once." Another one was a pronounced politician, and imparted the information that the "Constunel Amends" had been passed.

It might be surmised here that possibly he himself had assisted at the passing of one or more of the Constitutionals. As an offset to the above, however, it may be mentioned that two respected members of the fraternity showed what they could do in this line, by transforming Alfred Harris into A. J. Red Harris, and that gentleman, it may be added, did his level best to acknowledge their attentions by a Harrising pursuit.

## NEW YORK CITY ITEMS.

Mr. W. W. Mead, night manager A. U. office, this city, has resigned, to finish his studies for the ministry. Mr. W. C. Pearse has been appointed his successor, and Mr. R. C. Edwards succeeds Mr. Pearse as late night chief.

The Western Union, the American Union and Atlantic & Pacific telegraph companies, the Gold and Stock Telegraph Company and the Manhattan Quotation Company have obtained writs of certiorari to review the action of the tax commissioners in their assessment in regard to the individual companies.

During the thunder-storm on the 13th ult., one of the large elm trees standing on the Bat-



tery sidewalk was struck by lightning, which cut off several branches, barked its trunk, and then leaving reached the telegraph wire attached to the United States barge office, No. 6 State street, crossed the street upon it, doing no other damage than that of cutting the wire off at its entrance to the office. Under the tree stood several teams and trucks which, doubtless, would have suffered had it not been for the wire.

The Central Construction Company of New York was organized to erect poles and string wires for the American Union Telegraph Company. When the latter company sold its plant, etc., to the Western Union, no reason remained for the continued existence of the Central Construction Company. James Owen, Joseph Owen, and Amos H. Calef, a majority of its trustees, have applied to the Supreme Court for an order dissolving it. In their petition they say that the company has no debts and no unsatisfied engagements. Its capital stock is \$5,000, divided into 100 shares of \$50 each. Of these shares only 54 have been issued, and their holders are the petitioners, with Washington E. Conners and G. P. Morosini. Judge Cullen, holding Supreme Court, Chambers, has appointed Mr. Willard Bartlett as referee to take testimony in the matter of the petition.

### PERSONAL.

Supt. Frank Bell, of Reno, Nev., has resigned. C. E. Hubon is assistant manager at San Diego, Cal.

Messrs. Howell and Ward have arrived on the Pacific coast from the East and are both doing extra duty in San Francisco.

Mr. Charles Selden, formerly A. U. Supt. at Toledo, O., has been appointed Supt. of Telegraph on Jay Gould's Wabash system.

Mr. John Thomson, clerk to Supt. Meriwether, Mobile, Ala., resigned, July 1st, to go to the City of Mexico. Mr. B. P. Shreve, of Montgomery, fills the vacancy.

Tucson, Ariz., office has received an addition to its force in the person of Mr. J. F. Lewis. Tucson does a heavy business and keeps the wires equal to the weather—very hot.

Mr. J. C. Sherer, chief operator at Los Angeles, Cal., is East on a four months' leave of absence. Mr. Worthington, of San Francisco, takes Mr. Sherer's place.

Mr. Bell, operator at Tombstone, Ariz., has resigned and accepted a position in the telegraph office of the Oregon Steamship Navigation Co., at Portland, Oregon. Mr. Santler, from San Francisco, fills the vacancy.

Mr. Micha P. Austin, one of the oldest telegraphers in the East, and for twelve years night manager of the Western Union Telegraph office in Portland, Me., died in Cherryfield on the 16th ult.

Miss Minnie Reeve, telegraph operator and agent of the Minneapolis & St. Louis Railroad at Hopkins, Minn., was killed July 26 by a collision between an empty train and a locomotive on which she was riding. She was terribly crushed and scalded.

Charles A. Tinker, Superintendent of the B. & O. R. R. Telegraph Department, has resigned. It is probable that Mr. Tinker will be appointed a general superintendent of the Western Union. Mr. Robert Stewart, it is thought, will be his successor on the B. & O.

Supt. R. B. Haines and Manager G. Q. Stewart, of Los Angeles, Cal., have resigned. Mr. Haines now fills the position of Manager. A presentation consisting of a set of Macauley's "History of England" and a handsome gold pen was made to Manager Stewart before his departure.

During a storm at Evansville, Wis., on the 20th ult., the night telegraph operator, Hensgler, was struck by lightning and killed. It is supposed that his foot was resting on a ground wire under the table. He was struck near the heart, the charge passing out of his left heel.

Mr. Geo. W. La Rue, of Springfield, O., to-day enters upon the duties of superintendent for the Mutual Union Telegraph Company. Mr. La Rue is well known throughout the West, and his many friends will be glad to hear of his preferment. Mr. Geo. C. Van Cleef is his successor at Springfield.

It is pleasant to notice that the efforts of at least one operator to furnish information to the public during the excitement following the attempted assassination of President Garfield have been appreciated. Miss Clara Brown, operator at Tarrytown, N. Y., recently received a handsome present from her friends, in recognition of the manner in which she had during the week met the eager inquiries of persons seeking for the latest news concerning the President.

Mr. James S. Rice, P. R. & P. operator at Lebanon, Pa., died at that place July 12th, of consumption, aged 23 years. Mr. Rice was so much thought of that when he became so ill that he had to resign the company would not accept his resignation, but allowed him a two months' leave of absence with full pay, in the hope that he would recover his health—an example, by the way, which other companies might occasionally follow, in the case of faithful employés.

Mr. J. C. Hueston, London agent of the New York Associated Press, and an old operator well known in this country, had a narrow escape from drowning recently in what proved to be a successful effort at saving human life. While at Ems, on his vacation, and walking with his daughter across a bridge over the river Lahn, he noticed a drowning woman in the stream. The bystanders stood listlessly upon the bank, making no attempt at her rescue. As he saw her go under Mr. Hueston instantly plunged into the stream, without divesting himself of any of his clothing, and finally reached the shore in safety with his unconscious burden. The rescued lady proved to be a patient in a neighboring hospital, from which she had wandered in delirium.

CHARLESTON, S. C.—The only matter of interest here is the constant accession of members to the Telegraphers' Mutual Union. Matters are generally flourishing in Union affairs. We also have an employment bureau of our own, and are always ready to look out for any members wanting employment. There is considerable dissatisfaction displayed by Western Union men on account of the last cut in salaries and force. They are only waiting for something better to turn up, and as all wish to get out of a business where there is so little encouragement to remain, the time may come when good men will be impossible to obtain, and the policy of the company will bear the fruit of which they have sown the seed. TRUTH.

Messrs. R. J. Broderick, J. S. Butterfield, H. Bohanan and C. A. Durlan, operators in the Decatur Ill., office of the Wabash, St. L. & P. Ry., resigned their positions in a body July 1st, on being notified that their salaries were to be reduced from \$5 to \$10 each per month. The day operators only received \$60 a month, and the night men \$50 and \$55 respectively. They therefore, considered the reduction an unjust one, and claim that the arduous work they performed merited even better pay than they have been receiving. They are highly recommended by Yardmaster Hartman as careful, sober and reliable operators. They are men of sand, and will probably start for the far West in a few days. The reduction is made, it is claimed, that the wages of operators in small towns may be increased, without extra expense to the company.

The following are the dispatchers at Antonito, Col., for the San Juan Division of D. & R. G. Ry.: Messrs. Jas. A. Rasbach, O. A. Slocum, and Geo. A. Loasby, with Eugene Wadhams as W. U. operator.

Mr. George H. Hulbert, train dispatcher for the N. & C. R. R., Chattanooga, Tenn., died in that city July 6, aged 38 years. Mr. Hulbert was for a long time connected with the A. & P. in New York as operator and night manager, at 198 Broadway, and was well known in this city.

Mr. John E. Tierney, assistant electrician of the Bell Telephone Company, Portland, Me., has been transferred to take charge of the exchange at Old Orchard Beach, Me.

Mr. A. C. Preble, formerly manager of the Portland, Me., A. U. office, has charge of the W. U. office at Old Orchard Beach, Me.

### MARRIED.

ODENWELDER—HERBST.—July 21, at Ocean Grove, N. J., by Rev. S. C. Breyfogel, of Philadelphia, John M. Odenwelder, operator dis-

patchers office, C. R. R., of N. J., Phillipsburg, N. J., to Miss Cora O. Herbst, of Easton, Pa.

### DIED.

KNAPP.—July 5, 1881, at Indianola, Ia., Albert D. Knapp, of the A. U. force, Burlington, Ia., aged 20 years.

LABONTE.—July 26, 1881, in Brooklyn N. Y., Joseph Labonté, formerly of St. Hyacinthe, Canada, aged 38 years.

OZIAS.—July 16, at Arcanum, Ohio, of sunstroke, Benjamin F. Ozias, agent D. & U. R. R. and manager W. U. telegraph office, aged 43 years.

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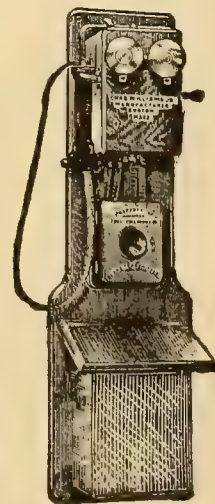
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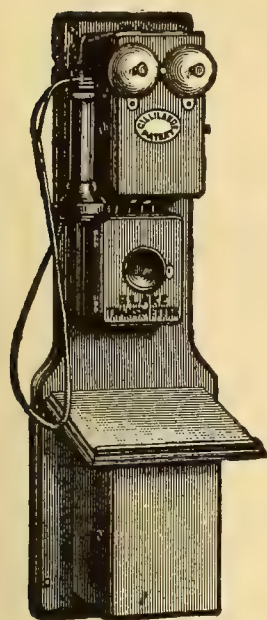
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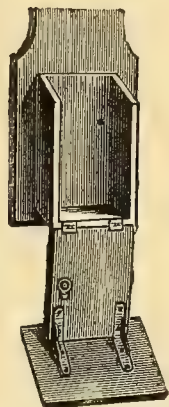
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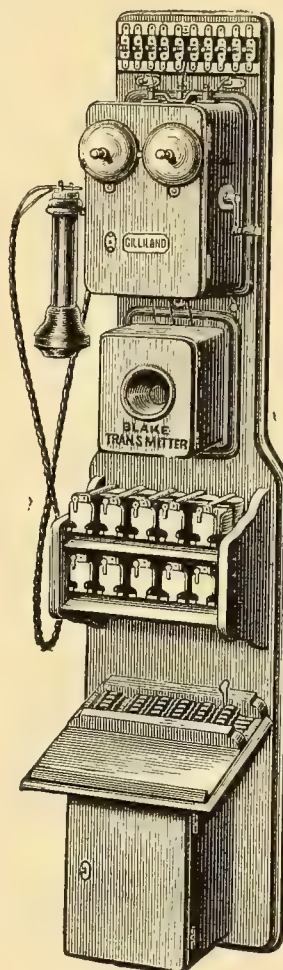


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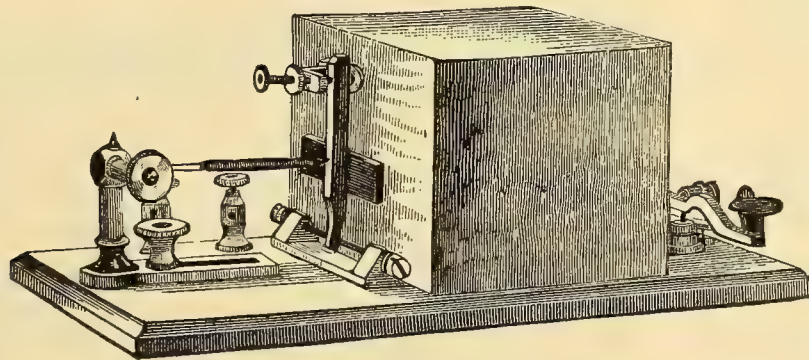
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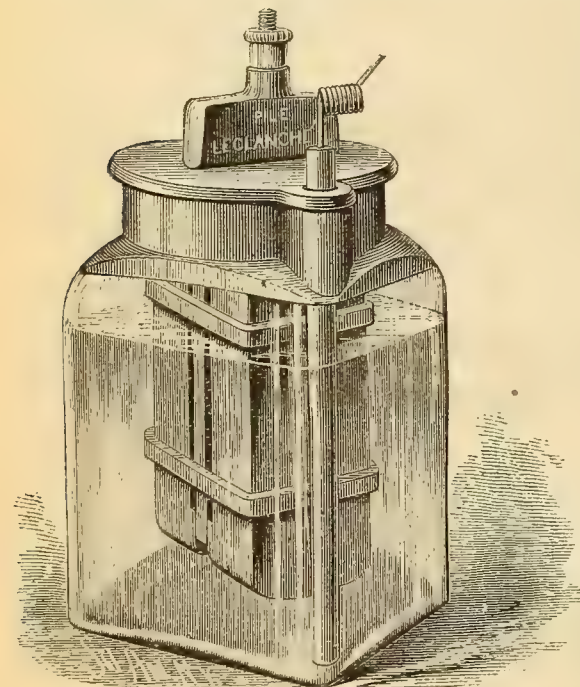
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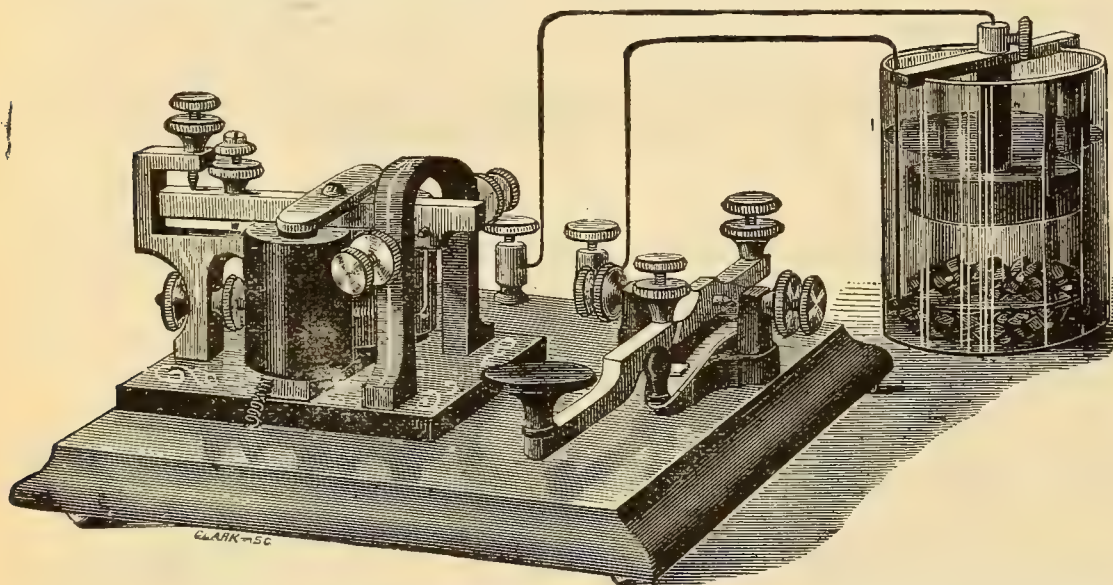
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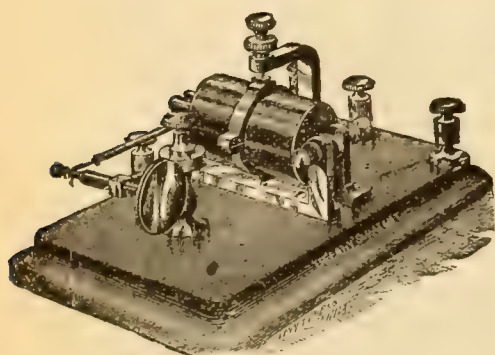
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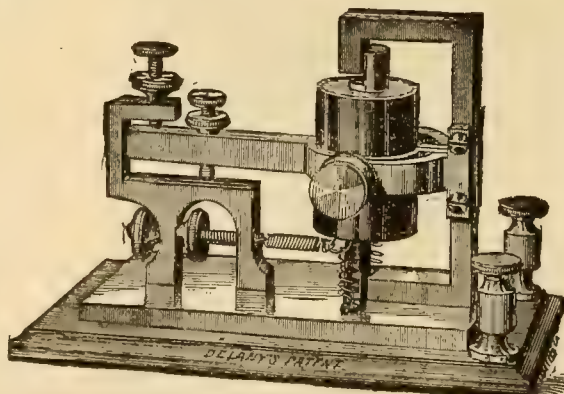
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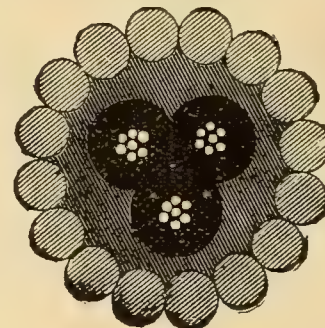
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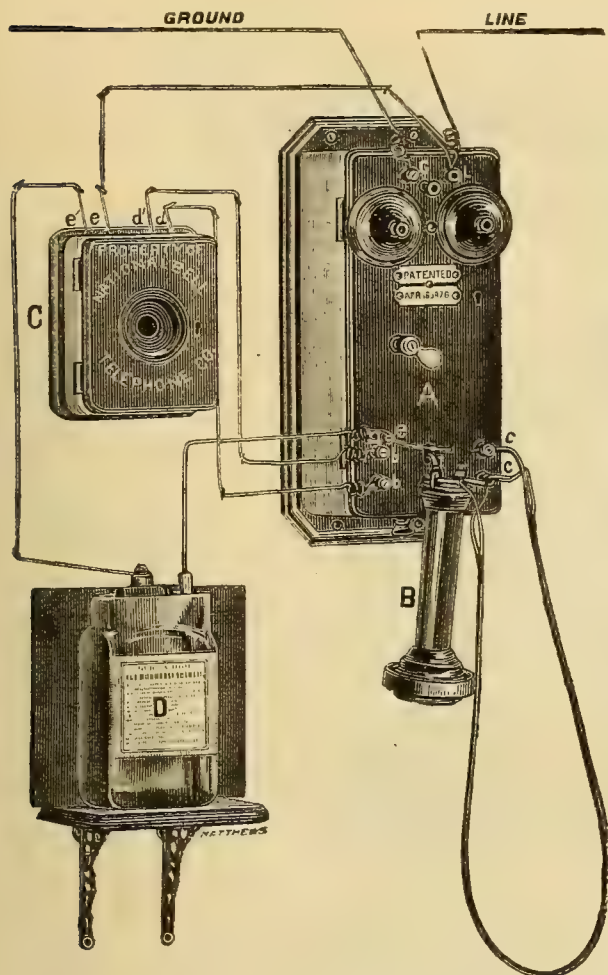
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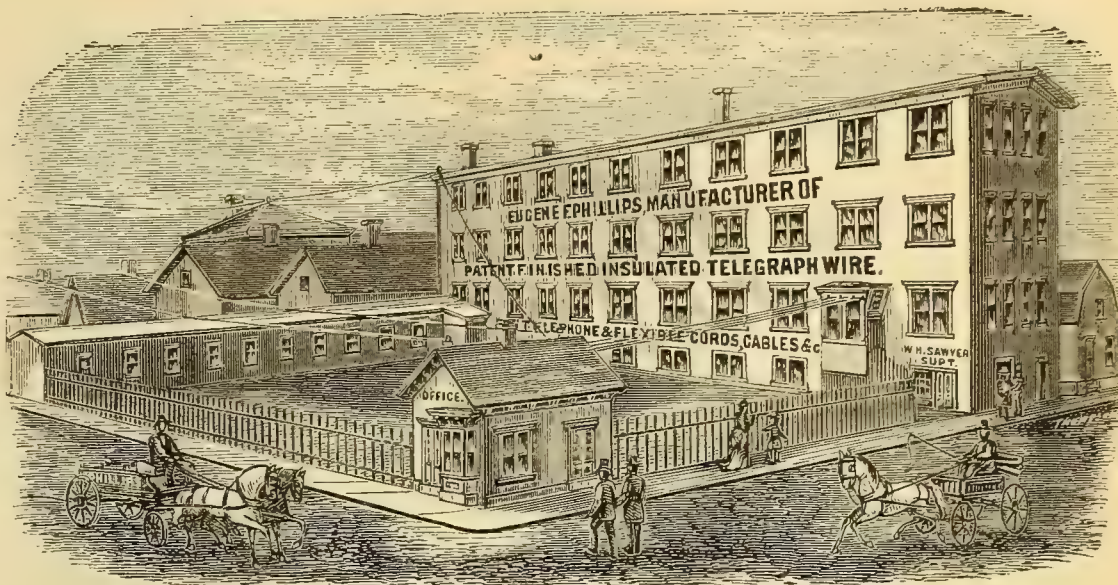
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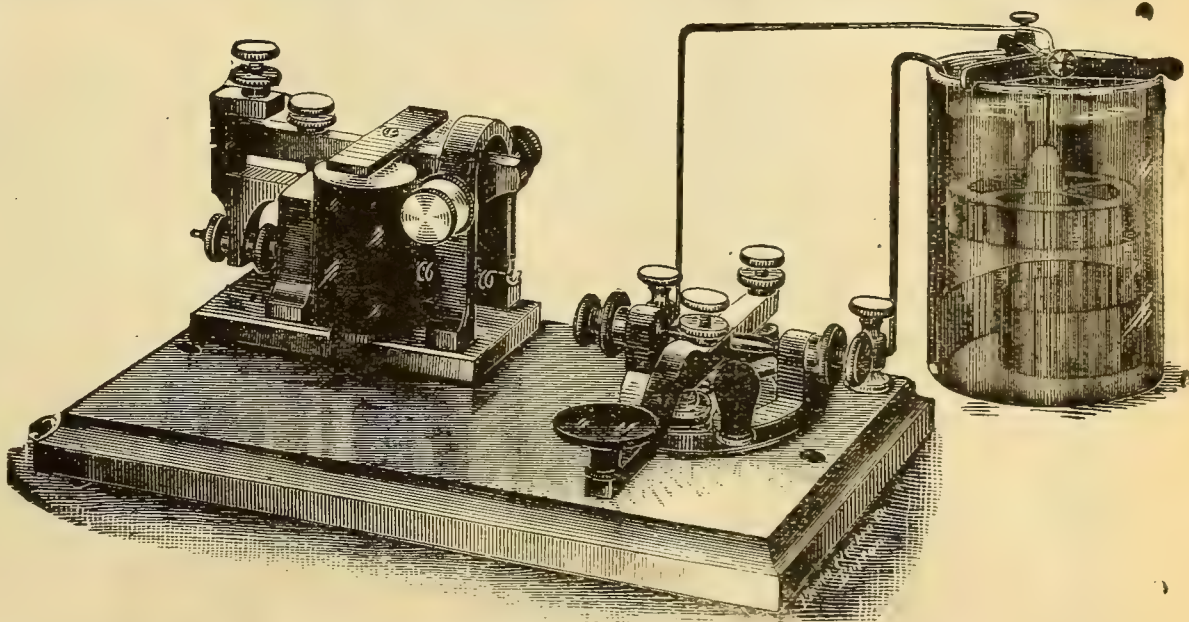
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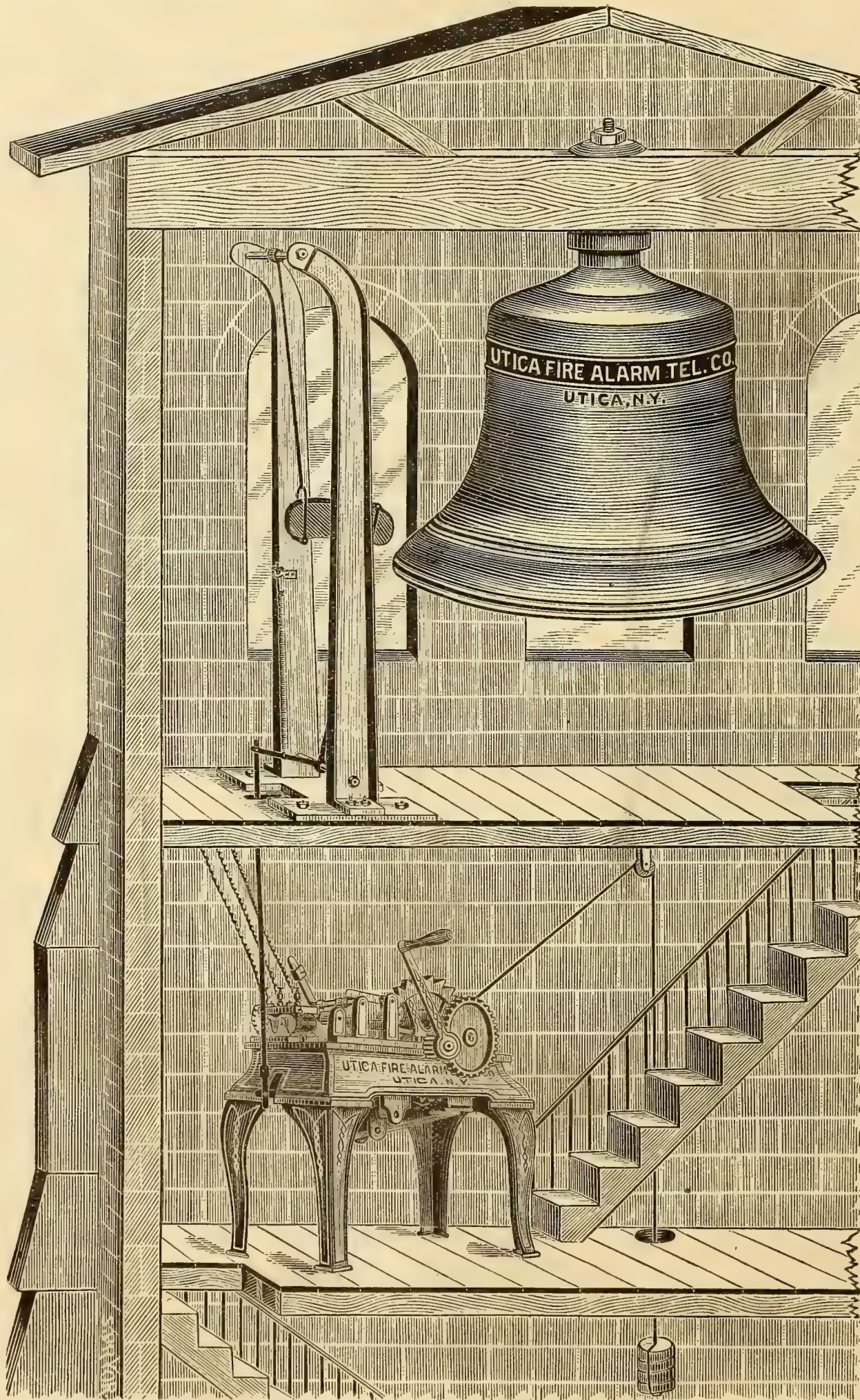
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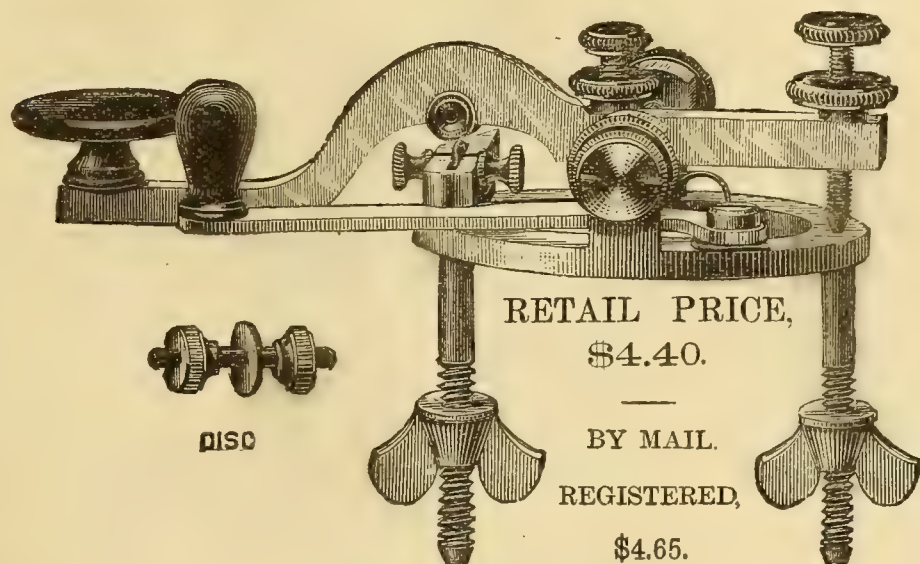
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**THIRD.**—Adjustability of the electrodes: For, if through any unforeseen accident connection should be arrested, both wheels, having a thousand possible points of contact, can be changed in an instant by turning each slightly on its axis to a new and bright surface.

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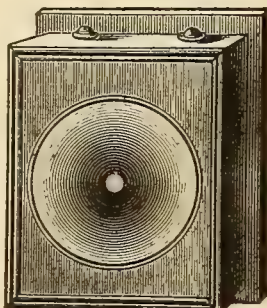
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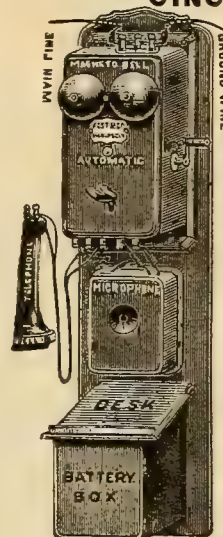
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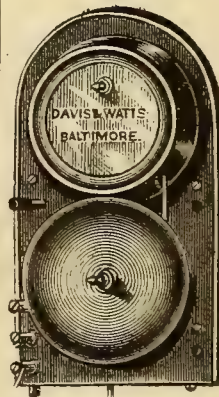
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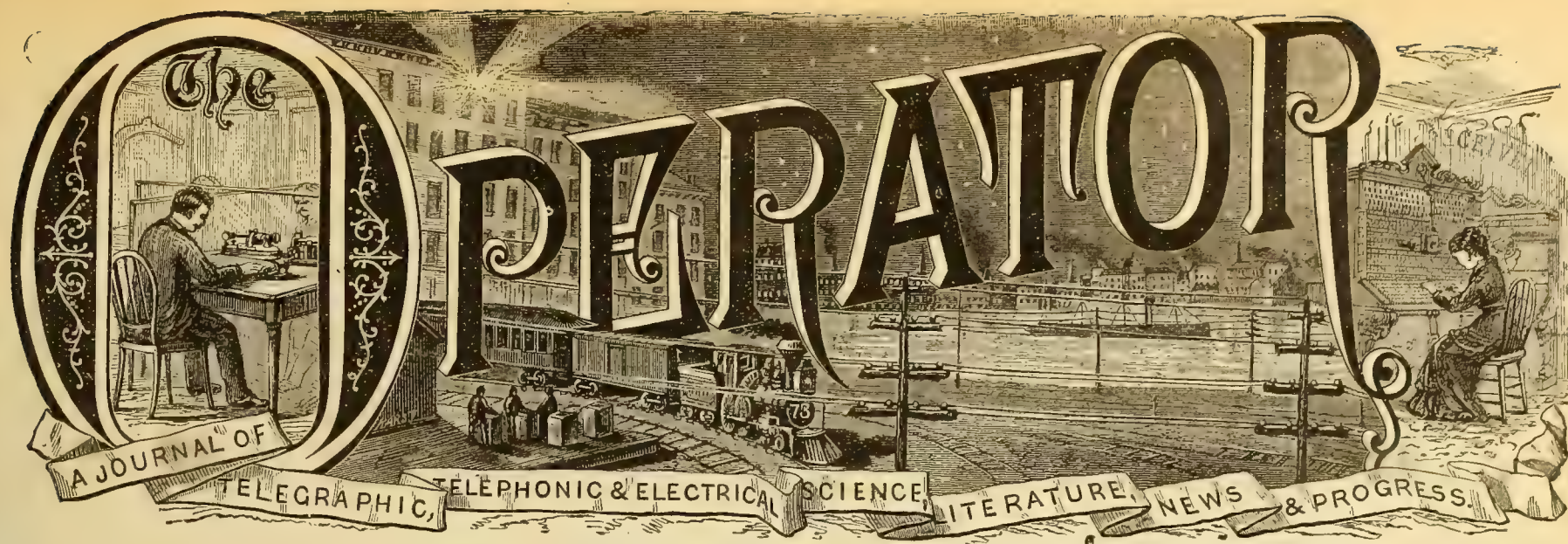
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VOL. XII.—No. 15<sup>16</sup>

NEW YORK, AUGUST 15, 1881.

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## THE ELECTRICAL EXHIBITION.

[By Cable and Mail from our Special Correspondent.]

Owing to many of the exhibits not being ready, the opening of the International Exhibition of Electricity, at Paris, was postponed from August 1st, to Thursday last, the 11th. At eleven o'clock on Wednesday morning, the Exhibition was formally opened by President Grévy, who passed the exhibits rapidly in review. Mr. Morton, the American Ambassador, received President Grévy at the United States section. On Thursday, the 11th, the exhibition was thrown open to the public. But few of the exhibits are in a condition for a public opening of the exhibition. The German department is not much more advanced than the American, notwithstanding the former did not have to encounter the delays of along sea transit.

The exhibition promises to be a much grander affair than was at first anticipated, and the extension of time in opening was necessary to enable the exhibitors to get their goods ready. At present the Palais de l'Industrie is a perfect beehive. Small buildings are going up in every direction, linemen are running wires, mechanics are setting up engines, carpenters are busy with hammer and saw, and those in the building who are not doing actual physical work are swearing at those who are. No one who has had experience with a French carpenter will be surprised to hear that much urging and profanity on the part of the unchristian exhibitor is necessary to get anything done. The Americans complain much of the fearful unreliability of French workmen, who seem to have no idea of the value of time. Notwithstanding the short time and the need for haste, these workmen must have an hour for breakfast at eleven o'clock, and another hour's rest at three, when they can be seen lying around the building indulging in their afternoon siesta. The arrangements are, however, gradually assuming shape, and an idea can be formed of what the show will look like when it is properly under headway.

All of the known electric light companies are here in force, with Edison's light, of course, attracting most attention. Edison has arranged light the grand staircase of the Palais during the exhibition.

His display promises, when completed, to be one of the most popular in the exhibition. By Sunday night 500 Edison lights will be burning in a room on the first floor especially fitted up for them. His agent intends, if

possible, to obtain the loan of wires connecting the French section with the Théâtre Français and the Opera. He claims that he will be able to make performances audible to a large audience by telephone. It is also promised that, by an automatic system exhibited in Edison's section, four operators will be able to telegraph 1,200 words per minute.

The American telephone people also present a strong front, and will have some very interesting exhibits. They did not unpack their instruments until just before the opening, fearing the effect of the clouds of dust that fill the place while the workmen have control.

Those of your New York readers who attended Supt. Scott's lecture before the Electrical Society, last spring, will be interested to know that the original Wheatstone bridge is shown as part of King's College exhibit. Mr. Latimer Clark contributes some old and rare books, and it is supposed that every important work published relating to the history and development of the telegraph is among them. In one of these works, the *Magie Natureles* of Baptista Porta, Naples, 1558, is a curious forecast of the magnetic telegraph, which describes a method of communicating at a distance with the aid of two ordinary compasses. One of the most imposing exhibits is that of the Siemens Brothers, in which is a model of the steamer Faraday, now engaged in laying the last of the new American cables.

England and Germany occupy the most space of the foreign countries represented. Next in order in size come Belgium and America. The electric railway is almost finished, but is not yet in working order. The ingenious electric boat of M. Trouvé, and the so-called Tissandier balloon were, however, ready for exhibition, and attracted a great deal of attention, as did also Faure's electric accumulator, by which electricity may be stored. The German section is principally devoted to the application of electricity to military and scholastic purposes. The English government exhibits are mostly of historical interest, and consist of all instruments used since 1837.

Some of our people who have to use any quantity of battery for their exhibits, and came expecting to find the material here, have had cause to regret their faith in French business principles. One exhibitor wanted 100 cells of ordinary Callaud battery, and was recommended to the largest dealers in telegraphic material in Paris. There he found nearly what he wanted, but the firm actually did not have as many as 100 cells of any

one kind of battery in stock. They could have them made, but required eight days to fill the order. The difficulty was finally overcome by sending the order to Berlin by telegraph, and having it filled in five days.

## LIGHTNING.

### Its Action upon Telephone Apparatus—How to Prevent or Reduce Troubles Arising Therefrom.

In these days of popular science, every one knows that lightning is the discharge of atmospheric electricity, and that it seeks, under all circumstances, the easiest and shortest road to the earth. The wide range of usefulness which the telephone has taken upon itself brings the subject of the present article home to every telephone manager and even to every telephone user. It cannot be denied that the majority of the latter class have a vivid impression that wires of any kind on a house make that house very liable to a lightning stroke, and that telegraph or telephone wires are especially subject to such a drawback.

Many people who would otherwise rent and use a telephone are by this apprehension debarred from that privilege; or, if they have one, they live in a state of chronic disquietude, arising from the thought that they are harboring a destroying angel, as it were, who at any time may turn and rend them.

This apprehension is well known by practical electricians to be to a great extent without legitimate foundation; but, nevertheless, it prevails and cannot be overlooked. Only those miserable and unfortunate persons whose terrible doom it has been to solicit roof permits from householders can appreciate the sentiment in all its glaring force. The proposal to establish a fixture upon the roof belonging to a free-born American citizen usually calls forth very severe objurgations upon the bloated corporations in the person of their unoffending agent then present. The assertion uniformly made by the agent, that the wires running over a house are absolutely a protection, instead of dangerous, is treated by the American citizen with undisguised scorn, as advanced by an interested party. The American citizen cannot be so easily imposed upon. He has never seen any one killed by electricity, but he has heard that such things are possible; therefore he has no desire to have wires worked by electricity placed on the top of his house. He has been told that a wire leading from the top of a house attracts lightning. What can be more



logical than that a wire running over your roof will also attract lightning, and, of course, after having attracted the lightning to the house, the death-dealing and treacherous wire has done its work because, as the wire does not run down the wall into the ground, the lightning must necessarily go through the house, in its endeavor to reach the earth.

Such are the arguments of the free-born citizen, when he condescends to argue at all.

The wires must, however, be stretched, and in fact always are stretched.

It is a fact also that where there are a sufficient number of wires crossing any roof, they form practically a much more reliable safeguard against destruction from lightning discharges than do fifty per cent. of the lightning rods, since they must in order to perform their legitimate functions satisfactorily form a good connection with the ground, in at least one of their terminals. Even when but a few wires cross a roof they protect that roof to a considerable extent. That property is protected by the wires passing over it, needs no other proof than the fact that the lower part of New York, which is literally covered by a network of wires, has for many years possessed almost perfect immunity from lightning casualties.

This immunity to the property under and surrounding the wires is, unfortunately, in a great measure at the expense of the wires themselves, or of the fixtures, poles or electrical apparatus, as has been frequently proven by disastrous experience. During the present summer, the fatality has been unusually great among the coils of magneto bells, telephones and Blake transmitters. A certain amount of such trouble and annoyance must always be expected and counted upon, as one of the inherent features of the business.

To enable amateur telephonists and others who have been brought by the force of circumstances into the telephone business to reduce this loss and annoyance to a minimum, this article is written.

Telephone lines when properly constructed are not so liable to damage from lightning as telegraph lines, for the common-sense reason that they do not usually extend over anything like so large a section of territory. Lightning will take the shortest path to the earth, even though that path be of much greater resistance than the longer route; hence, it has been found possible to construct lightning arresters or protectors.

Lightning is neither restricted to the properties of machine or frictional electricity, nor to those of galvanic electricity, but partakes of the nature of both, being possessed of high potential in addition to being present in large quantity.

This latter is, of course, due to the electromotive force with which it is propelled being so enormously great in proportion to the resistance which the discharge has to pass through, even though that discharge be also great.

Being of such a high potential, or having such a high tension, as is demonstrated by its capability of passing through such wonderful distances of air as it does, it follows that we can construct a protector based upon the principle previously enunciated, that lightning will take a short route through the imperfect conductor in preference to a longer one through a good conductor.

Telephone managers, then, who have erected upon their lines the so-called induction appliances, consisting of ground wires extending down the poles and branch wires along the cross arms, can console their wounded pocket books with the reflection that, even should these appliances prove ineffectual for the purpose for which they were erected, with a slight alteration (namely, continuing the connection of the cross-arm wire up to a point outside though not touching the insulator and facing the wire, and extending the upright pole wire a little distance above the top

of the pole) a reliable lightning conductor is established and the poles and wire protected.

Even in their present condition they do efficient service. Each magnet bell is or should be furnished with a lightning arrester of some kind, usually a plate connected with each entering wire placed close on either side of a plate with saw-like teeth which is connected to the ground.

Any one wishing additional security may add to this different forms of protector. For instance, it may be of use to place near the point where the wires enter the office a cylindrical piece of brass connected to the ground, and insert in the line circuit on both entering wires a piece of fine silk covered wire. The lightning, in this case, instead of passing through the magnet or transmitter coils will go to earth at the metallic cylinder. There is, however, a serious objection to all protectors of this class, especially when at a distance from the central office, for the reason that when a discharge takes place through them they are more than likely to be ruined. On this account we give some precautions which every telephone constructor can employ with great advantage and at little or no additional cost.

First, owing to the second attribute of electricity (its considerable quantity), it will heat, sometimes to the melting point, and destroy the wire, unless its conducting path be large enough and the ground wire be both low in resistance and of considerable size; and it will also, in its attempt to choose another route to the earth, be likely to destroy a good deal of the apparatus, burning and melting the metal parts, and breaking to pieces all the non-conducting portions.

It is the part of wisdom then with all those who deplore such wholesale destruction of property to see that they have a ground wire of large substance and also surface, and that such a ground wire makes a perfect connection with the ground. In a former article we gave our views on ground wires and will not repeat them here. It is not, however, as well understood as it should be that a lightning arrester ground, whether at a central office or at a subscriber's office, in order to be of any practical utility, must be of large size and, moreover, its connections must be of large surface and thoroughly attached. For size we would say not less than five-sixteenths of an inch, iron or copper wire. The connection may properly be made on a water or gas pipe as usual; but if a gas pipe is used and the connection made on the house side of the meter, the meter should invariably be bridged with a stout piece of copper wire, to improve the conductivity and also to prevent the meter from receiving damage.

The older magneto-bells had but one binding screw for their local battery connection, and it was customary for the individual connecting them to connect the other battery wire into one of the main line connection screws. This, of course, left one end of the primary coil of the transmitter always in connection with the line, and in the event of the line receiving a lightning discharge a portion of it would frequently seek earth through the primary coil and across to the secondary, burning both out in transit. Therefore, if you have to connect a bell with but one local battery screw, don't connect the other battery wire in the line post, but in the upper telephone connecting screw on the right hand side of the bell. Bells are now made with binding screws for all the necessary wires.

Some exchanges have been fitted with protective appliances to be attached to their line wires on the approach of a lightning storm.

The contrivances are especially applicable to small exchanges, where all the wires can be easily controlled by one person, but they are readily modified so that they can be applied to exchanges of any size.

The contrivance consists, generally, in so arranging the apparatus that on the approach of a thunder-storm all the lines are put directly to earth. A brass plate is arranged behind the switch-board, crossing all the wires; this plate is fixed upon pivots, and is in permanent connection with a very large ground wire. On the approach of a storm a lever attached to the plate is depressed, bringing the plate into good contact with all the line wires, or with a series of small plates connected to them, at a point before the line wires reach the annunciators.

This, of course, puts them all to ground and it is found that wherever this arrangement is used the destruction of bells and transmitter coils is materially lessened.

### Telephone and Telegraph Clam Dinner.

In the summer of 1879, Mr. Eugene F. Phillips, the well-known manufacturer of insulated telegraph and telephone wire, sent invitations to his customers to come to Providence and partake of a Rhode Island clam-bake with him. The affair was so successful, and those who went enjoyed themselves so well, that Mr. Phillips has continued the commendable practice every year since.

The third annual "social gathering of telephone and telegraph men," as the notes of invitation call it, took place on Saturday, Aug. 6, and was the most largely attended of any yet held, about 60 representative telephone and telegraph men being present.

As delegates arrived they reported at the telephone exchange. About noon they all repaired to Mr. Phillips' handsome residence on Broad street, whence they proceeded in a large party wagon, drawn by six plumed and prancing horses, to the headquarters of the Bondholders' Club, a fairy-like retreat on the Pawtuxet River. The whole party at once began to enjoy themselves in the manner which seemed best in their own individual eyes. Foot-ball, leap-frog, baseball, playing tag, and like sports, were indulged in, until those who yesterday had been the dignified officials of telephone and telegraph companies, and the like, were now transformed in a twinkling into frolicking schoolboys, enjoying their recess games. The gentleman who remarked, with an exuberance of feeling that was unmistakable, that he had not felt so much like a boy before in fifteen years, doubtless uttered the sentiment uppermost in every mind.

Presently Mr. H. C. Bradford, late manager of the Providence Western Union office, called the company to order, and introduced ex-Mayor Doyle, who, in behalf of Mr. Phillips, welcomed those present to Rhode Island, and invited them to the tables to partake of a luncheon, consisting of clam chowder, clam cakes and relishes, the clam-bake coming later. After devoting a proper amount of time and attention to the luncheon, sports and games were renewed with unabated vigor.

Adjutant General Barney, manager of the Inter-State Telephone Co., Providence, and Mr. Henry W. Pope, Vice-President of the Mutual Union Telegraph Co., New York, superintended the target shooting. The entrance fee was ten cents, and the winner got the pool. The entries were large, and much interest was displayed. Mr. Pope sustained the reputation of the metropolis by carrying off the honors and the dimes in one pool, while Mr. J. F. Shorey, of Boston, won another, making the best score of the day.

Among the outdoor sports the wheelbarrow races occasioned the most fun. Two blindfolded contestants with their backs to the goal—a pitchfork fifty feet away—each took a wheelbarrow, turned around and tried how near he could come to striking the stake. Few of them went in the direction of the pitchfork at all, and those who did generally managed to get a considerable distance past it, finally taking off the bandage from their eyes, looking sheepish and discouraged, amid a burst of laughter from the crowd.

Mr. M. W. Goodyear, of New York, representing the house of L. G. Tillotson & Co., and Mr. H. L. Shippy, also of this city, representing the John A. Roebling's Sons Company, indulged in friendly rivalry with the wheelbarrows. Had it not been for a fence which marks the outside limit of the bondholders' grounds, some distance from the stake, it is thought by some that Mr. Shippy would not have halted until he had reached Connecticut soil. The route he took, too, after turning around, instead of going straight ahead, was in a comparative bee-line to his right. Mr. Goodyear sped along at a brisk rate in the direction diametrically opposite to that Mr. Shippy had chosen, and finally put down the wheelbarrow, amid uproarious laughter all along the line, at a distance estimated to be about two hundred feet from the stake, though it is only fair to Mr. Goodyear to say that nobody measured it.



Mr. George F. Truell, Special Agent Mutual District Telegraph Co., New York, was the only one who struck the stake. He carried off one of the pools.

Mr. L. N. Downs, of Worcester, managed to come pretty close to it, and, notwithstanding the protests of his competitors that he "could see" and that Mr. J. C. Sheehan, W. U. manager at Providence, had coached him, he was awarded the other pool. A barrow race up and down hill, between Mr. E. S. Beckford, of Boston, and Mr. Downs, was much enjoyed; Mr. Beckford being tall and slim, and Mr. Downs short and stout. The former won.

There was a boat race on the Pawtuxet. The rowing was done in pairs, the winners to row a final race. Messrs. W. A. Hall, of Boston; A. C. White, of Providence, manager of the telephone exchange, and L. N. Downs, rowed in the final race, Mr. Hall coming in ahead.

About four o'clock the clam-bake, with water-melon and other dessert, was served in excellent style, and as most of the party had whetted their appetites in their efforts to enjoy themselves, ample justice was done the meal.

After dinner, the time was principally spent in singing, recitations and story telling, a Mr. Levi Burdon, of Providence, keeping the company in an almost continuous roar of laughter at his inimitable anecdotes. Mr. Burdon not being connected with the business, the stories were not of a telegraphic or telephonic character, but they were excellently told and warmly applauded. A visit to the Park Garden to see "Olivette" concluded the programme, though a few of those from a distance, including the New York delegation, remained in Providence all night, and spent Sunday at Newport. Throughout the day not a single incident occurred to mar the pleasure of the occasion, and every one seemed to enjoy himself to his utmost capacity.

The following were present:

BOSTON.—Moses G. Crane, W. A. Hall, F. E. Harris, Jos. W. Stover, Chas. Williams, Jr., J. F. Shorey, E. S. Beckford, George W. Boston, T. D. Lockwood, H. B. Lytle, George Willis Pierce, N. W. Lillie, W. D. McKenny, J. H. Cheever, Wm. B. Ross.

NEW YORK.—M. W. Goodyear, H. G. Runkel, I. A. Sherman, C. B. Hotchkiss, Isaac Davis, E. M. Carhart, William Mackintosh, H. W. Pope, George F. Truell, Charles H. Porter, W. J. Johnston, H. L. Shipley.

PROVIDENCE.—H. C. Bradford, F. H. Gardiner, E. C. Spink, W. H. Darling, C. H. Barney, Augustus Wright, Reginald C. Brown, Henry H. Sherman, J. O. Darling, Thos. L. Reed, W. H. Sawyer, A. C. White, Abiel F. Davis, G. W. Zanson, Walter S. Goff, C. J. Sheehan, Edwin A. Smith, Geo. H. Albee, P. J. Hurlburt, E. F. Phillips.

Also Robt. D. Mason, of Pawtucket; Wm. M. Whitney, of Albany; Geo. H. Bliss, of Pittsfield; J. A. McCoy, of Fall River; W. J. Denver, of Springfield; J. H. Lounsbury, of Hartford; E. B. Baker, of New Haven; L. N. Downs, of Worcester; E. J. Hall, Jr., of Buffalo; Schuyler Walden, of Brooklyn.

The following, among others, sent regrets at their inability to be present: H. G. Pierson, A. S. Dodd, F. L. Pope, R. W. Pope, J. H. Bunnell, A. S. Downer, A. B. Chandler, J. C. Hinchman, G. A. Hamilton, J. H. Longstreet, E. W. Andrews, and Gerritt Smith, of New York; W. H. Forbes, Boston; F. O. Vaille, Denver; W. D. Sargent, Philadelphia, and Geo. F. Durant, St. Louis.

#### Retirement of a Well-Known Journalist.

Mr. James W. Simonton, who has occupied the position of General Agent of the New York Associated Press for the past fourteen years, tendered his resignation July 27, and Mr. James C. Hueston, at present the London agent of the association, has been appointed to succeed him. Desire to attend to his private business was the main cause of Mr. Simonton severing his connection, and the association, in accepting his resignation, at a full meeting authorized the Executive Committee to express their appreciation of his services in the following communication:

NEW YORK, July 27, 1881.—The Executive

Committee of the Associated Press, to whom was intrusted the duty of preparing the expression of opinion of the association in regard to the voluntary retirement of James W. Simonton as General Agent of the association report as follows: That Mr. Simonton has been the General Agent of the association since Nov. 5, 1866, and that in all these years he has discharged the duties of his responsible and arduous work with great fidelity to the several members of the association, and with general acceptance to the public. The office is one which requires capacity, integrity and industry, and we have never found the General Agent wanting in any of the qualities. Mr. Simonton leaves the association of his own free will, and not at the request or wish of any of its members. In accepting his resignation our best wishes go with him for his complete restoration to health, for personal happiness and prosperity in all the future of his life.

(Signed) ERASTUS BROOKS,  
In behalf of the Executive Committee.

#### Boston Personals.

To the Editor of The Operator:

SIR: On Wednesday evening, August 3, a goodly company assembled in the spacious parlors of Mr. Geo. F. Milliken's residence, the occasion being the presentation to that gentleman of a testimonial of regard and esteem from his former associates in the Western Union Co.'s Boston office, where he has for so many years most creditably and satisfactorily filled the office of manager.

There were present besides Mr. Milliken's family, Messrs. Jaius Harlow, Cashier; E. F. Leighton, Night Manager; William Martin, Thomas A. Davin, C. D. Stanford, E. B. Pillsbury, Wm. McFarland, C. L. Pope, C. E. Davidson, C. G. Pond, John Mc Grath, F. J. and J. H. Millikin, the two latter gentlemen being accompanied by their wives.

When Mr. Milliken, who had been induced to absent himself during the gathering of the "clan," entered the house he found the hat-rack very much preoccupied, as it were. Hanging his hat on the door knob, he quickly glanced through the open door. Each new face proved a surprise that was unmistakably genuine, and a climax was reached when Mr. Leighton stepped forward, and in a few well-chosen words handed the astonished gentleman a beautiful gold watch with an elegant chain and seal attached.

The recipient replied briefly, and although much taken aback, the few words he uttered satisfied his listeners that much more was felt than could be expressed. Indeed, he frankly told them that he would be obliged to fall back on office regulations and "put it in writing."

These little formalities over a general good time followed, commencing with some excellent singing by a male quartette, consisting of Messrs. Davin, Stanford, F. J. Milliken, and "mine host," who, having now somewhat recovered himself, entered with zest into the pleasures of the occasion. Then came songs by Miss Georgie Milliken and others, and finally the company repaired to the dining room, where, after the good things, provided undoubtedly at the expense of the host, but certainly without his knowledge, had been disposed of, cigars were lighted and the remainder of the evening was pleasantly passed in social converse, speeches, reminiscences, etc., and when all had joined in singing "Should Auld Acquaintance be Forgot," the guests took leave of their former chief and unanimously agreed that one of the most enjoyable evenings of their lives had drawn to a close.

Subsequently Mr. Milliken sent a letter to Mr. Leighton expressing his deep sense of gratitude for and appreciation of the kindly feelings manifested by his late associates, and wishing each and all prosperity and happiness.

J. J. C. Wilson, formerly chief operator American Union, this city, has been appointed superintendent of W. U. city lines and district inspector. At the birth of the American Union, Mr. Wilson worked the N. Y. quad at 109 State st. Messrs. Finan and Dundon have been transferred from the A. U. to W. U., day force. J. W. Wood and P. J. McMahon are enjoying a vacation. They are represented here by L. C. Braulik and John T. Stevens, respectively. Both are from Washington. Frank A. Glidden, from N. Y., is here "subbing" for Chas. A. Hurd, in broker office. We are very sorry to learn that Mr. Hurd

is quite sick. Harvey Wheeler, from N. Y., is with us, and has a corner on the N. Y. quad nights. Frank M. Davis is making a short stay here and is on for Mr. Pope, who is plowing the briny deep with his beautiful yacht. Mr. F. A. Bradford, from the Rapid Co., this city, pleases the boys on the Chicago duplex night W. U. office.

Business is healthy with us. In fact, it has absorbed all the health operators ever had. Men are obliged to work day after day with no prospect of having a vacation, owing to the scarcity of "subs," however desirous a vacation might be. J. R. McLean has resigned to accept a position in Philadelphia. Resignations are now in order, four having resigned since August 1.

X.

#### Chicago Notes.

To The Editor of The Operator:

SIR: The sudden death of John Dyer, at Milwaukee, Monday, 2nd inst., of gastric fever, created profound sorrow among his friends in this office. He was a perfect gentleman and a very talented operator for one so young in the profession. A beautiful floral tribute, consisting of a broken column with the words "C. H." and "30," was sent from St. Paul, Minn., to his home in Hudson, Wis., by order of his friends in this office, with the following message:

H. M. Dyer, Hudson, Wis.: We have just learned of the sad bereavement you and yours have sustained in the untimely death of your brother, at Milwaukee, this morning, and, as friends and co-laborers of the departed, we beg to tender to the family of the deceased our deepest feelings of sympathy. We lose a true friend, the fraternity a kind and honorable member. Please accept this floral offering as a small token of the high esteem in which we hold the memory of our departed brother.

#### CHICAGO BROTHERHOOD OF TELEGRAPHERS.

Arrivals: C. A. Scott, London, Ont.; Frank Barnes, J. W. Garret, Geo. S. Geiger, C. E. Bennett, F. B. Amyx, Abe Bruch, W. B. Montgomery, Kansas City; Michael Burke, Mr. Hovey, Jim Lewis, New York; Miss Jamieson, Aurora, Ill.; Wm. Sleight, Quincy, Ill.; Nelson from Detroit, Fred Robbin from Kansas City.

Departures: Albert Kane, gone with Armour & Co., pork packers, in this city; Griswold, to Ogden, Utah; Geo. Stapley and Al. Hughes, to New York; Geo. W. Samuels has left the American Union for Indianapolis.

Officially appointed: Assistant Chief Lloyd transferred from Division C. to Division A.; Nick Burke appointed Assistant Chief Division C.; Geo. Thompson, Assistant Chief Overland Wires; Geo. N. Willis, to Philadelphia and Pittsburgh wires.

Off on vacations: Will. Kane, Devil's Lake and the Dells of Wisconsin; Gus Carroll, East; Miss Gately.

A petition was lately presented to the management praying that extra compensation be allowed for Sunday work, and thanking them at the same time for the unexpected "extra" for services on the 3d and 4th of July.

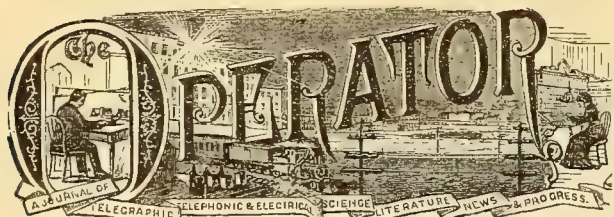
T. R. ("Dick") Lewis recently passed through this city, en route to California, via the Southern Pacific Railroad, in search of health. For the past three or four months, he and F. S. Vanvalkenburg have been at Vera Cruz, Mexico, for the Mexican Telegraph Co. Dick will be remembered as a pioneer in overland telegraphy, having been engaged in the Siberian expedition.

CHICAGO, Aug. 8.

The principal electric lighting companies, comprising the Brush, the United States, the Fuller, the American, the Jablochkoff, and the Western, have united in an organization to enforce their numerous and important patents against manufacturers and users of infringing patents.

A Western correspondent writes us: "Apropos of your article in regard to unsatisfactory W. U. service at Kansas City, let me say that that office is and has been the pride and pet of Col. R. C. Clowry, General Superintendent. On that office he built his reputation, and points to it with a great degree of pleasure as an office that does so much work at so little cost. He has not, however, given it out that this model office is the birth place of nine-tenths of the 'bulls' that have afflicted this western country."





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## NEW TELEGRAPH LINES.

Since it has been demonstrated that a law court is not the proper place to "compete" with the great consolidated Western Union, some of the more enterprising spirits have directed their attention toward the only fair and reasonable way of conducting such competition, viz.: By going to work and building new lines. Although it is only six months since the consolidation was formed, there is already plenty of opposition in the field, and the prospects for operators are fully as bright as when the late lamented American Union was in full blast. The consolidated Western Union, which had early begun to cut salaries and increase hours of labor, has already taken a reef in her sails; the "economists" are either all dead or keep very quiet, and old employes who had been chalked as prospective victims have been solicited to remain.

About the most promising, at present, of the new companies is the "Postal Telegraph Company." It was organized in this city on the 28th of July, with a capital stock of \$21,000,000. Mr. James R. Keene was elected President, and Mr. Henry E. Fanshawe, Secretary; Mr. C. H. Haskins, the eminent electrician, and formerly General Superintendent of the Northwestern Telegraph Company, was elected Vice-President. Among the most prominent stockholders are Mr. J. R. Keene, George D. Roberts, H. Victor Newcomb, Robert W. Mackey, of the Comstock lode, and James O'Brien, the California millionaire. The stock is chiefly in the hands of California, New York and Boston capitalists, although a considerable portion of it is said to be taken in Europe. The purpose of the company is to construct a system of telegraph lines in the United States, Canada, and Mexico, and do a general telegraph business, the prospectus promising that lines equivalent in working capacity to the present Western Union system, and including every *paying* point covered by that company, shall be in operation by Jan. 1, 1883.

The lines are to be constructed on a purely cash basis, and none but through paying lines will be opened at first.

They will use a variety of systems of telegraphy, including the Gray harmonic multiple, by which seven messages can be transmitted over one wire at once; Gray's way duplex system, and Mr. W. A. Leggo's system of fac-simile telegraphy. Under the latter system customers will be served with prepared paper and ink, with which to write their messages. The message is then placed on

a large wheel, alone, or with other messages for the same destination. The wheel revolves rapidly and the electric circuit of which it forms a part is alternately broken and restored by a fine-edged wheel which passes over the letters in parallel lines very close together, and a fac-simile is produced at the other end of the line. The letter may be white on a black ground, or vice versa. Drawings, sketches, and music may be sent in the same manner.

On some of their circuits they claim that a speed of 2,500 words per minute will be obtained by their automatic system. As this would make 150,000 words an hour, or 4,000,000 words a day upon one wire, the number of lines to be built will be correspondingly decreased. Indeed, the new company claims that with this system it can transmit more promptly and reliably all the business between all the leading cities of the country on lines with only three compound wires, with its improved methods, that is now being done on lines with forty wires.

The announced policy of the company calls for "cheap and uniform rates, absolute certainty and celerity in the transmission and delivery of messages without regard to atmospheric conditions, a distinctive commercial business, whereby persons may communicate with each other without the intervention or knowledge of any officer or employé of the company, a cheaper and better automatic stock reporting system, a distinctive postal telegraph system for long messages and letters to be delivered through the post-offices in delivery cities. For this purpose the company will issue postal telegraph stamps at uniform low rates. It will have all its lines completed within 18 months."

The compound wire which the new company intends to use is a steel wire with a copper coating. The process of manufacture is covered by patents. The wire has been used by the American Rapid Telegraph Company for its lines, and it is said to be the only wire over which the "Rapid" system can be worked. The conductivity of this wire is much greater than that of any other wire in use, the resistance being so much less than that of the ordinary telegraph wire, says the prospectus, as to bring "Chicago telegraphically as near New York as Syracuse, compared with the best wire now in use, and bringing San Francisco this side of Chicago. The wire is double the tensile strength of an iron wire of equal size; its conductivity is increased at the joints, while iron wires loses from 25 to 60 per cent. at the joints. It is claimed that the compound wire does not deteriorate with use. The patents covering this wire and the machinery and appliances used in its manufacture, as well as the factory, have recently been purchased by the Postal Telegraph Company. The price paid is said to have been \$1,500,000. This purchase will prevent the American Rapid from extending their existing lines, except upon terms stipulated by the Postal Telegraph Company.

The Mutual Union is also making fair headway, and is now practically at work between Boston, New York, Philadelphia, Baltimore and Washington, and expects to reach as far west as Cincinnati by the 1st of October.

It is now definitely stated that the Baltimore & Ohio Company has decided to go on its own account, and to maintain a separate organization for the transmission of commercial business. This is a bitter disappointment to the Western Union.

Still further agitation is caused in telegraphic circles by the rumor that the Pennsylvania Railroad is about to come forward to heap coals of

fire on the head of the would-be monopoly. The rumor, which, however, is not properly authenticated, although it seems plausible enough, says that at the expiration of existing leases—at an early day—the Pennsylvania Railroad Company will decline to make new contracts; will assume control of all telegraph wires along its road, and will organize an independent telegraphic system for commercial business.

This, then, will place in the field five separate and distinct opposition companies—the Postal, the Mutual Union, the American Rapid, the Baltimore & Ohio and the Pennsylvania—covering every profitable point in the Western Union system.

Symptoms of that despicable method of competition—a pole cutting war—have broken out already in New Jersey. At Montclair a number of the Postal Company's poles have been chopped down, but at present there is nothing to indicate that this action was instigated by any rival concern, and we shall be loth to ascribe it to any particular person.

To all these signs of increasing prosperity we may add an unprecedented amount of telegraphic business, and the determination of all the opposition companies to obtain at least a fair share of the profits—by rendering thoroughly good service to the public, and encouraging instead of blighting loyalty among their own faithful workers.

CHICAGO may always be depended upon to be ahead of anyone else, and, since her operators sent the message of condolence to President Garfield, based upon their claim upon him by having "transmitted broadcast the news of his nomination," she has established still another claim to originality, if not superiority—that of being the only town in the country where the operators are at loggerheads. It seems that "One of the Brotherhood" considered it necessary to reply to certain strictures in the *Chicago Times*, and addressed a note to that paper defending the present admirable telegraphic organization. As might be expected from all such useless controversy, "An Old Operator" replies in behalf of the company, in whose books he has doubtless registered his full name. The *Progressive Age*, of Chicago, thereupon takes the "Old Operator" in hand in a vigorous, though rather primitive, style, informing him that in his role of obsequious fool he represents the feudal times "when men sold their daughters to the 'lord' for a personal place as huntsman;" that he is a relic of the "hat-touching era;" that such "reptiles" have no place in our free country, and that "while it is in the nature of dogs of a certain breed to express gratitude for kicks, men who have manly attributes do not feel much of that sentiment for a corporation which pays," etc. Altogether there is much honest, if not altogether judicious, indignation in our esteemed Chicago contemporary's arraignment of "Old Operator;" and, being professedly a faithful chronicler of all telegraphic events, we thus call attention to it. But, whatever the merits of the case may be, how wrong soever "One of the Brotherhood" may be in his deductions, we are still inclined to believe that "Old Operator"—judging by the tenor of his letter to the *Times*—wrote that document with the sole hope of a ten-dollar increase of salary. He may make his point with the existing management, with whom he possibly has an understanding; but if—that is, if—Mr. Charles A. Tinker should happen to go to Chicago at any time, and exercise his usual keen insight into human nature, he will not be led astray by the



Chinese blandishments of "Old Operator." If the management of a district is faultless, its merit will speak for itself without the necessity of habitual fawners apologizing for it in the newspapers; and, if we have not mistaken Mr. Tinker's character, he will at once get after such professional favor-seekers as "Old Operator" with a stuffed club.

WE regret to have to announce the retirement of Mr. James W. Simonton, the distinguished journalist and orator, from the general management of the New York Associated Press, after fifteen years of active service in that high position. Mr. Simonton received a thorough journalistic education on the staff of the New York *Times* and as a Washington correspondent. For some years past he has been the proprietor of two San Francisco papers—the *Bulletin*, an evening journal, and the *Morning-Call*, the editorial management of which he has continued to direct, notwithstanding that his duties in connection with the Associated Press required him to pass nearly all of his time in New York. He has had for many years control of a number of operators, employed on the leased lines of the Associated Press, all of whom regard his departure as the loss of a personal friend, and none of whom ever yet found a word of complaint against his administration. He has received from the Executive Committee of the Associated Press a most flattering acknowledgment of his fidelity and efficiency, to which we desire to add our humble testimony. His retirement is regretted by the entire press of the country.

SINCE Mr. Simonton leaves the Associated Press in such a high state of efficiency, his successor to the office of Director-in-Chief of the vast ramifications of that organization must needs be an extraordinarily competent and practical man. The selection, however, of Mr. James C. Hueston, an old-time operator, to fill that position is sufficient guaranty of continued good service. Mr. Hueston, who is at present head of the London Bureau of the Associated Press, is well qualified for the peculiar requirements of his new position, being the son of a successful editor, a practical printer and telegrapher, and a graduate of Princeton College and of the Columbia College Law School. He recently attracted widespread attention by his gallant rescue of a drowning woman at Ems, Germany—reported in the last issue of THE OPERATOR—and, if we may judge by the industry and discrimination displayed in his management of the foreign news department of the Associated Press, Mr. Simonton will have a worthy successor. Mr. Hueston was for many years Assistant General Agent in this city, and is highly esteemed here, both as a journalist and a lawyer.

MR. CHARLES A. TINKER, who, it is believed, is about to succeed Col. Clowry in the supervision of the Western Union Central Division, is a well-known and reliable officer, though not more so than Col. Clowry himself. Mr. Tinker, however, possesses many claims for advancement under the new management of the Western Union. He was manager of the military telegraph office of the War Department at Washington, under Gen. Eckert, and was subsequently, for five years, manager of the Western Union office at Washington, succeeding Mr. D. H. Bates in that position. Since then he has been for four years superintendent of a railroad and General Superintendent of the Central Division of the Atlantic and Pacific lines. In company with Mr. Bates, he was one of the nominal organizers of the

American Union, and afterward became Superintendent of the Baltimore & Ohio. He is 43 years old, and has always borne a high reputation as an efficient and considerate executive officer.

THE number of accidental deaths—four during the past eighteen months—caused by shocks from machines used by electric light companies, seems to be creating a sentiment against the use of the dynamo machine. It should not be forgotten that there is no more danger involved in these machines than in a circular saw or any other revolving machinery. No matter what the machinery may be, some inquisitive countryman is bound, sooner or later, to poke his fingers into it, and when he gets them nipped off his friends declaim against the machine. The generating machine is certainly as harmless as any other piece of mechanism, and the sure way to prevent "accidents"—one of which is reported in another column—is to prevent ignorant or careless people from handling them.

IT seems now to be absolutely certain that the Baltimore & Ohio Railroad Company has decided not to accept the proposition of the Western Union to renew the contract made with the American Union, and which will soon expire. The Baltimore & Ohio will then maintain a separate organization, and keep open independent offices at all points on the Baltimore & Ohio, Ohio & Mississippi and Marietta & Cincinnati railroads. It is also morally certain that, upon the expiration of existing leases, the Pennsylvania Railroad and its branches will decline to make new contracts with the would-be monopoly, and will assume control of all wires along its lines, hiring its own operators for the transaction of commercial business. All of which is good news for the operators.

WE have to congratulate that intelligent and faithful body of young men comprising the U. S. Signal Service upon the decision of the Attorney-General that the two commissioned officers who are permitted by law to be appointed annually to the signal corps shall be selected from among the enlisted men. A strong effort was made to have certain officers taken from the regular army, so as to give them an easy berth in Washington, upon the pay-roll of the Signal Corps, without regard to their efficiency in that branch of the service, and we are glad to see that, under the Attorney-General's decision, the commissions must now be given to worthy sergeants in the corps.

THE new cable rates—twenty-five cents per word—went into operation on the 1st inst., and still the old companies appear cheerful. Mr. John Pender, in addressing a meeting of the Direct Cable Co. recently, in London, said: "If the American company will conduct their business in a fair and business-like manner, there will be enough for them as well as for us." We sincerely hope that Mr. Pender's statement is based upon accurate calculations as to the profits accruing from a twenty-five cent rate, but, if it be correct, why did the idea not strike the late cable monopoly before?

THE great number of people killed by lightning during the present summer is most alarming, but when we find the electric bolt suddenly descending from a cloudless sky, as has twice happened during the past fortnight—once at Wilkes Barre, Pa., and again in South Carolina, where a single flash killed four men and wounded twelve

—there is cause for the gravest apprehension. While our scientists may not be able to afford us protection, the relations between heat and electricity are so close that the subject may be found interesting to them.

THE laying down of the cable between Berlin and Stetin completes the subterranean telegraph system in the German empire. These cables now cover 3,420 miles, nearly all of them having seven wires. They are laid beneath all the principal rivers, and establish direct telegraphic communication between 221 different cities and towns of the German empire. The first cable was laid four years and eight months ago.

THERE has been so much talk lately about reduction of salaries by local martinetts, that some one at headquarters seems to have interfered, since the tide has suddenly changed. The "one case of a clerk in Charleston" who had his salary "rearranged" seems to have been pretty numerous; for since the "clerk in Charleston" was told to stand up and show himself, the woods appear to be full of them.

WITH our experience of the tardiness of international exhibitions, we should not be surprised to hear that the Electrical Exhibition at Paris was not ready to be opened on the 1st inst., and that its opening was postponed until the 11th. It is now open, however, though many of the exhibitors are considerably behind hand. A report of the opening, with other interesting matter in reference to the exhibition, from the special correspondent of THE OPERATOR, will be found in another column.

DR. TANNER, the great faster, is drawing up propositions to the medical faculty of New York to fast three months. He said to a reporter that he can fast ninety-five days if fed on electricity, the air in his room to be charged with a strong current. This being positive, he can obtain a negative element from the disintegration of his tissue.

THERE is still time, and, in the interest of science, Professor Bell should send his improved induction balance to the Electrical Exhibition at Paris. The improvements made upon this simple device and its recent successful application in the case of our President are alike creditable to American genius.

WE much regret that, owing to unavoidable circumstances, it was impossible for us to secure the biographical notes for the subject of Our National Portrait Gallery, even for the present issue. The information, unfortunately, came too late to permit of preparing the portrait of a substitute.

THE success of Professor Bell in accurately locating the bullet in the President's body, by means of his improvement upon the Hughes induction balance, is extremely gratifying. Electricity has thus added one more valuable implement to surgery.

THE business of chopping down the poles of new telegraph companies seems to have recommenced in New Jersey. The Postal Telegraph Company is the victim this time. The choppers are unknown.

THE comparative falling off in telegraphic news incident to the dog days, permits us to compress the paper into our regular size (sixteen pages) once more,



**Milwaukee Melange.***To the Editor of The Operator :*

SIR: The first month under the new regime of the W. U. has wrought many changes in the old N. W. force. Experienced and reliable men have been allowed to go, their places being mostly filled by raw recruits from railroad offices, etc., until but one or two first-class men can be found on the once excellent force. Resignations continue to be handed in at a rate that is astonishing to our worthy (?) manager, who seems to be totally indifferent as to the injury he is doing the company's interests, in not offering some little inducement to the really good men who cannot submit to the present management as regards hours of labor and diminutive salary. The night force are well off in comparison with the day men. The former are paid extra after seven hours labor a day, while the latter are required to work  $9\frac{1}{2}$  hours a day, and in addition two hours every third night, and three hours every other Sunday, for which they receive nothing whatever.

A series of very questionable actions have lately been indulged in by the chief operator, which have caused those affected thereby much pecuniary annoyance. Some three or four of the men, becoming dissatisfied with the work allotted them and the small salary they received, tendered their resignations, which were accepted conditionally, that is, when men could be procured to fill their places. As men in search of situations, however, were not over-numerous, the chances for their getting relieved in the near future were very slim. Overtures were made to the men by the chief, who offered to change their tricks, and increase their salaries from \$5 to \$20 each, to take effect at once. This the men accepted. When pay-day arrived, they found to their chagrin that their salaries were unchanged, and the manager coolly informed them that the chief was not authorized to supervise the pay-roll, and he himself had no authority to raise salaries without orders from the superintendent, which he expected to receive sometime during the coming month.

Late arrivals: Davison, Anderson and Ames, St. Paul; Peabody, from Minneapolis; Miss Spears and A. S. Shape, from Fond du Lac; Davenport, from Atchison, Kan., and Miss Webb, from Morris, Ill.

Departures: Angell, St. Paul; Wilson, New York; Palmer, Boston; Brady, Chicago, and Miss Gether to Oshkosh.

John A. Dyer, recently arrived from St. Paul, and employed on the C. & M. force, died here after a week's illness.

J. M. Marlet has been transferred to Board of Trade force.

H. M. Scott, manager Board of Trade office, has left on a wedding tour to the East for two weeks. OCTOPUS II.

**Omaha (Neb.) Notes.***To the Editor of The Operator :*

SIR: Luke Fisher, after many moons journeying in the East and South has at last landed again at "Om." and it is reported he will soon take unto himself a "partner;" further the deponent sayeth not. Jim Clute has retired once more to the rural seclusion of Red Oak, Iowa, as operator for the C., B. & Q. He took with him one of Omaha's fairest school "marms." May Jim and his wife live long and prosper. L. M. Rheem, the new manager of the W. U., is spoken of very highly by the boys, and we hope he will treat the men under him as well in the future as he has since assuming charge of that office. Tom Curry stood his little "set-back" with as good grace as possible. He says it is all in a life-time. Tom was offered several inducements to leave the W. U. after the consolidation, but he preferred to "stick it out" and see what old mother "Monop." had in store for him. We hope it will be something good when it comes. Tom deserves it, if any one does. He has been a faithful worker for the W. U. C. E. Mayne, for several years night manager of the W. U., has resigned and accepted a pleasanter and more lucrative position with the "Omaha Daily Bee." Mr. F. M. Crittenton has been appointed to fill Mr. Mayne's place. "Dad" Armstrong, late Manager of the A. & P., now works one corner of the "Ch." quad, at "Om." Omaha has its usual number of old-timers, and first-class men.

Among them we notice: "Fatty" Stone, Geo. McMahon, Ed. Dennison, Perry Chamberlain, A. H. Mayne, Con. Dwyer, S. J. Ritchie, Clarence Foote, J. B. Twiford, Geo. Gould, J. B. Prichard, Geo. Arbuthnot, Mr. White, Mr. Murphy, Mr. Hulahan (of Detroit), Mr. Rusland and Mr. Storm.

It is "rumored" that Sam. Ritchie is going to Minneapolis as chief operator. We hope Sam will "catch his man" in Minnesota. Mr. McGuire, the gentlemanly all-night chief, still holds the fort after 12 o'clock. Charley Horton, as cashier, continues to finger the cash and say "no" to the boys. George O'Brien and George Dickenson are the train dispatchers for the Bridge Division of the U. P. Jo. Boyd is still chief dispatcher for the East Division of the Main line. Mr. Cralle has been appointed chief operator of the U. P. general office, telegraph department. OKCG.

**Buffalo (N. Y.) Items.***To the Editor of The Operator :*

SIR: Some of the boys are getting discontented. The men with whom they work in other cities tell them of the salaries they receive, and the boys can't understand why their salaries should not be as large, doing the same work. For instance, one man, who resigned and went to another city, draws \$32 more per month for the same work he did here. Manager Tillinghast and Chief Operators Kitton and Reynolds are trying their best to get the boys graded so they will be satisfied, and applications have been forwarded to Supt. Gifford for an increase of salary for about twenty men, with Mr. Tillinghast's approval, but this has not yet been heard from, and the general opinion is that the "shell bursts" in Mr. Gifford's hands, as he is generally considered to be in favor of \$50 men, and will, perhaps, bring on farmers from Cohoes, Skaneateles, and Herkimer county, to fill vacancies.

The departure of first-class men is on the increase, while the incoming operators, with two exceptions, are very poor. I am informed that Messrs. N. H. Perrin, T. J. Tynan, S. A. Farley and W. H. Pinkney have sent in their resignations on account of insufficient salary. Among the new arrivals we notice Jeff. Prentice from Texas, who turns out beautiful copy and cannot be excelled at the key. GUESS.

**Southern Salaries.***To the Editor of The Operator :*

SIR: There appears to be some dispute or misunderstanding between the "prominent officials" and THE OPERATOR, or rather its correspondents. On the first of June the manager of this office was notified to discharge one clerk, reduce salary of bookkeeper \$5 per month, all operators receiving over \$85 to be reduced \$5. He was also ordered to discontinue all extra to the operators. This was a general order issued from New York. I can't see for my life how the "prominent officials" in New York could have been so ignorant in regard to the reductions, when they themselves issued the order.

Two men from the A. U. were placed in W. U. here first June, but they were reduced five dollars per month, making their salary \$75. Both were first-class men. The general order in regard to the extra has since been rescinded, but instructions to the manager are not to allow any extra to be made, if it is possible to avoid it. We expect the Cotton Exposition, which opens here first of October, to create a "boom" in business, and we will need more men. Good men are very scarce all over the South. Supt. Meriwether complains that he cannot get men to fill places now open in his district. Operators' Union will organize here on 7th inst. THICK LIP.

ATLANTA, Ga., Aug. 4.

**Oil City (Pa.) Personals.***To the Editor of The Operator :*

SIR: Variety being the spice of life, the power behind the throne seems inclined to allot Oil City its full quota. We have had three changes in the management here within the past four months. At consummation of the consolidation, Oil City came under the jurisdiction of Supt. D. O. Wickham, who installed W. A. Drake as Manager, vice M. E. Luce, resigned. July 15th, D.

O. Wickham, resigned, being superseded by C. O. Rowe, who placed Frank Ross, Circuit Manager, in charge as Manager and Circuit Manager. Mr. Drake retires with an unsullied character. During his managership he proved himself a man of sterling character. Mr. Ross is deserving of great praise for the manner in which he discharges the onerous duties of manager, circuit manager and chief. S. M. McKee has resigned as Assistant Circuit Manager and Chief, and takes his place with the "boys." W. A. Drake and C. C. Klumph have been transferred to Pittsburgh, where they work the Philadelphia duplex. J. H. Gross has been transferred to Philadelphia. He leaves a record of handling 100 messages, with Ahrensburg, of the Pittsburgh Oil Exchange office, in 27 minutes. The dates were omitted, as is done between all oil exchanges. The above constitutes all changes in Oildom since our last. "ME TOO."

**TELEPHONE DEPARTMENT.**

Ann Arbor and Ypsilanti, Mich., have been connected by telephone.

There are now nearly 150 offices connected by telephones in Hamburg, Germany.

The Chicago Telephone Co. has opened an exchange at Elgin, Ill., with Mr. Wm. Hubbard, a well-known old time telegrapher and inventor of the Elgin acoustic telephone, in charge.

The Empire State Telephone and Telegraph Company has its principal office in Auburn. The purpose of the company is to establish communication, both telephonic and telegraphic, between certain points in Yates, Oswego, Onondaga, Cayuga, Wayne, Ontario, Monroe and Seneca counties, New York State. The capital stock of the company is \$50,000, but power is given to increase the stock to \$200,000.

Our telephone friends must not forget that the next telephone convention takes place at Saratoga, N. Y., on Tuesday, September 6. We endeavored to get, for publication in this issue, some information as to what is being done by the officers of the association in the way of preparation, but have received the reply that the details have not yet been sufficiently perfected to publish anything about it. It is hoped that the next convention will be largely attended.

Mr. P. N. Hay, station lineman at the John street office, M. T. & T. Co., resigned his position on the 30th July to accept a more lucrative one in the Eastern States. Mr. Hay was one of the best linemen in the company's employ, and leaves behind him many warm friends, who wish him the best of success.

The handsome gold medal bearing the following inscription has been presented to Mr. Hay: "To Philo Hay, as a token of esteem, by the employes of 198 Broadway."

The Providence, R. I., exchange has 975 subscribers, 400 wires and 24 operators, all told. A new, light and commodious operating room is being fitted up. The switches, which are very handsome and contain all the latest improvements, are from the manufactory of Messrs. Post & Co., Cincinnati, O. To prevent the necessity of grounding wires in "cutting in," Snell jacks are attached to all the switches. This plan is said to work admirably. The superintendent, Mr. J. W. Duxbury, is a well-known electrician of long and varied experience, and the exchange under his supervision is giving its subscribers splendid service. Mr. A. C. White is electrician and manager.

Mr. T. G. Ellsworth, manager of the John street office of the Metropolitan Telephone and Telegraph Co., New York City, recently held conversation with several employes of the company over an open wire. The circuit, two miles in length, was opened at a fixture on the roof of a building, one end of the wire being fastened to the insulator in the usual way, the other end tied around the cross-arm of the fixture not nearer than three inches from the insulator. The telephone current passed through the resistance of a Brooks rubber insulator and three inches of the wooden cross-arm, which was perfectly dry, no rain having fallen for several days.

Conversation was easily carried on during the test, with the telephones in ordinary use. The high tension of telephonic currents has been con-



sidered to be great, but this test shows them to be much greater than is generally believed.

The Gilliland Electric Manufacturing Company, of Indianapolis, are the largest manufacturers of telephone supplies in the world. The company is named after Mr. E. T. Gilliland, "our western Edison," a Cincinnati boy in whose well and hardly-earned prosperity a host of old friends rejoice. The company yesterday shipped a car load of telephone apparatus, consisting of 1,000 bells and 15 switch-boards, etc., for which the Merchants' Dispatch Transportation Co. issued a through bill of lading to Antwerp, Belgium, via Red Star Line Steamship Co., New York. This is the largest shipment of telephone supplies ever made, and will be followed by others of same quantity from time to time. The company is shipping to all parts of the world, their apparatus having the best improvements and being eagerly sought after.—*Cincinnati Commercial*, July 19.

Mr. H. W. Pope, 29 Murray street, New York, Chairman of the Committee on Subterranean Lines of the National Telephone Exchange Association, has issued a circular in which he asks telephone men to forward to him as promptly as possible any statistics or general information regarding the construction or operation of subterranean lines within their jurisdiction, together with as full answers to the questions herein as possible: 1. Has any attempt been made to force the construction of subterranean line, and with what success? 2. What laws, ordinances, etc., have been adopted in your State, city or town in regard to the construction of underground lines? 3. What subterranean system is being introduced and constructed within your jurisdiction? 4. Is it constructed and operated by any independent organization? 5. Is not the great expense, together with the extreme difficulties to be met in the construction and operation of subterranean lines, likely to result finally in the adoption of an aerial cable system; and is not such a system preferable?

Andrew Albright, a wealthy manufacturer of Newark, and Charles Holzhauser, a druggist, have been cited to appear in the United States District Court at Trenton, N. J., to answer a suit brought against them by the Bell Telephone Company. The suit will test the question of whether Alexander G. Bell is the originator of the principle of transmitting sound by electricity. About eight months ago Mr. Albright went to New York and purchased two Bell telephone instruments, which he caused to be placed, one in his factory and the other at his residence. He connected them with wire, and used the line thus constructed for private business. Recently a lawyer from New York waited on Mr. Albright, and ordered that he should at once desist from the use of the instruments, and surrender them. Mr. Albright declined to do either, and declared his readiness to have the question tested in the courts. He said he did not recognize Mr. Bell as the originator of the transmission of sound by electricity, but that it was originated in 1861 by a resident of Pennsylvania, named Reis. He also claims that he bought and paid for the instruments and has a right to use his own property. Mr. Holzhauser takes the same stand, although he has not yet put his instruments into use. Both gentlemen have been served with notices to answer to the telephone company's summons at the September term of court.

## DASHES HERE AND THERE.

Western Union stock is quoted at 89. Last issue it was 86 $\frac{1}{4}$ .

The new steamship *Servia*, of the Cunard Line, is being fitted with 98 electric lamps.

The Municipal Council of Paris intend to tax telegraph and telephone wires in sewers.

All the chief French light-houses will soon be lit by electricity, and provided with powerful steam trumpets for fog signals.

If you want to become a telegraph operator send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.

It is reported that the Edison and United States electric lightning companies are considering a proposition for the settlement of their disputed points without litigation.

The Brush Electric Light Company has purchased a lot in Philadelphia upon which it will

erect a large plant for lighting Chestnut street and such business places as it may have orders to supply.

A dispatch from London says that, on Monday last, by invitation of the Messrs. Siemens, the ocean cable manufacturers, 150 delegates to the International Medical Congress visited the cable construction steamer *Faraday*, and inspected the new cable for the Anglo-American Company.

The University of Griefswald can now boast of the largest electro-magnet ever constructed. Twenty-eight iron plates have been bent into a horseshoe shape, and connected by iron bands. The magnetizing helix consists of insulated copper plates and wires.

James Mayorga, aged 15, a Mutual Union District Telegraph messenger, wilfully misplaced a switch on the Hudson River R. R., at Sixty-first street and Twelfth avenue, and very nearly sent a train to destruction. They put him in jail to think it over.

At a meeting on the 8th inst. of the stockholders of the United States Electric Lighting Co., it was resolved to increase the capital stock of the company from \$1,100,000 to \$1,500,000. The increased stock is to be used as working capital. The latest quotation of the company's stock was 235.

Samuel Hagan, a 12-year-old A. D. T. messenger, of this city, has just been sentenced to ten days' imprisonment in the city prison for tearing up a message he was sent to deliver. This is the first conviction under the new law, which makes it a misdemeanor for a telegraph messenger boy to destroy or fail to deliver a message.

The Brush Electric Light Company, of Baltimore, has a force of some seventy men at work at its Central Station, grading the ground and preparing for the foundation of the new building in which will be placed the first plant of the company. The company has now more orders on hand than it can fill for some time to come.

The "Long Distance Electric Call Company" filed articles of incorporation in the County Clerk's office in this city, on the 6th inst. Its objects are the manufacturing, operating, furnishing and renting of all kinds of electrical apparatus used in transmitting telegraphic or electrical calls and messages and electrical communications of every description, and the production of electrical illuminations. The capital stock is \$50,000. The incorporators are James N. Jameson, Wm. C. Lockwood, James Brady and Alfred P. W. Seaman.

Some crazy fellow in Lancaster, S. C., handed in the following message: "We in South Carolina had nothing to do with shooting Garfield, but I'm not going to shed any crocodile tears over it." Payment for the message was tendered, but the operator, Mr. Brennick, refused to accept the money or transmit the telegram. He tore it up and drove the man from the office. This was certainly patriotic, but we fail to see the benefit to the company if operators are allowed the privilege of tearing up messages and driving customers by force of arms from the office.

Just after an unusually heavy flash of lightning during the storm last Sunday evening, about 30 wires running into the Western Union main office in this city were suddenly enveloped in flames. They had been "struck" by the electricity in the atmosphere, and the rubber insulating coating of each wire burned like paper. For a moment everybody was startled, but the cooler ones soon recovered, and by cutting the wires prevented any further damage from being done. It took all night to put the 30 wires in working order again, but there was no delay in the business of the office.

A man was killed in Buffalo, N. Y., Aug. 8, at the rooms of the Brush Electric Light Co., by touching the wires of a dynamo machine. The victim, George Leonard Smith, had been previously cautioned not to touch the machine. Disregarding these warnings, Smith caught hold of the "brushes." The manager stopped the engine instantly, when Smith threw up his arms, gave a long, deep gasp for breath, and instantly expired. The thing was done so quickly that those who witnessed it could scarcely believe their eyes. Smith's face had assumed a pale bluish tint, and was drawn out of shape. His hands were badly burned, and on several of the fingers the flesh was burned to the bone.

The annual meeting of the stockholders of

the Edison Electric Light Company of Europe was held recently at the Fifth avenue offices of the Edison Company. T. A. Edison, James H. Banker, Robert L. Cutting, Fred. W. Foote, and S. B. Eaton were elected directors of the company. No further business was transacted save to discuss the arrangements of the company for the introduction of the Edison light in Europe. In addition to its exhibit at the Paris Exhibition the company is going to make a test exhibition of the workings of the Edison system for the satisfaction of a French syndicate formed for the introduction of the light into Paris.

Regarding the difficulty of finding a suitable insulator for electric-light wires underground, Mr. R. J. Sheehy, Superintendent of the Brush Electric Light Company of this city, made an affidavit recently to the effect that no insulating compound had yet been made that would answer for the transmission of power for his company's electric light. Compounds that would answer for telegraphic and telephonic uses would not do for the electric light. S. B. Eaton, Vice-President of the Edison Electric Light Company, says that all the wires of his company will be laid underground. The system consists of an iron tube, two inches in diameter, filled with an insulating compound of Mr. Edison's own invention, impervious to heat, cold, or moisture. Inside the tube, imbedded in the insulation, are two copper bars or discs, each one inch broad, and one-quarter of an inch thick, which carry the positive and negative currents. It has been used in Menlo Park six months with perfect satisfaction, extending over six miles of wire. It was only a foot under ground, but it will be placed two feet below the street in this city.

## PERSONAL.

Mr. E. R. Chapman, of 115 Dearborn street, Chicago, is Western Superintendent of the Mutual Union Telegraph lines. Mr. Geo. Farnsworth, for many years manager of the A. & P. at Indianapolis, Ind., is Superintendent of Construction at Toledo.

Parsons, Kan., has the following operators: Miss Sallie Judkins is manager of the W. U.; F. B. DeGarmo is operator for Mo. Pac., days, and G. E. McGonegal night owl. A. W. Gay, F. C. Cowden and H. F. Hindmarsh (the latter late of Muirkirk, Ont.), are the train dispatchers.

Messrs. Cross and E. A. Randall from Vermilionville, La., have been added to the Houston, Texas, W. U. force. Day Chief J. A. McNabb has resigned to go to Kansas City, Mo.; no one has yet been appointed to fill the vacancy. Work is very heavy and brisk demand for operators, but none to be had.

On July 6, Hattie May, aged 2 years, daughter of Frank H. Borhek, agent and operator at Atco, N. J., died of diphtheria. On July 13, Mr. Borhek's family was again visited by death, Gertrude Amanda, 5 years of age, the last of his children, being taken away by the same dread disease. The family has the heartfelt sympathy of Mr. Borhek's associates and friends in this their sad bereavement.

Mr. R. W. Pope has resigned his position as Deputy Superintendent of the Gold and Stock Telegraph Company, this city, to accept the General Managership of the Union Electric Manufacturing Company, 7 and 9 Bond street, New York. Mr. Pope has been nearly ten years in the G. S. service and is one of the best known and most popular men in the business. His many friends will wish him every success in his new field of labor.

Mr. W. T. Westbrook, who has been manager of the Western Union office at Wilmington, Del., for 22 years, has resigned to engage exclusively in the telephone business, in which his large experience, telegraphic and otherwise, will doubtless insure him success. Mr. Westbrook has been in the service 31 years, commencing as a messenger boy.

Mr. Chas. E. Wise, late of the Western Union office at Newark, O., has been appointed manager in place of Mr. Westbrook.

The position of superintendent of telegraph of the Baltimore & Ohio Railroad Company, made vacant by the resignation of Mr. C. A. Tinker, has been filled by the appointment of Mr. Robert Stewart, Mr. Tinker's immediate predecessor in



the same position. Mr. Stewart is an experienced telegraph and railroad man, who was formerly in the employ of one of the New Jersey divisions of the Pennsylvania Railroad. He left there to become Superintendent of the Baltimore and Ohio telegraph system. In February, 1879, Mr. Stewart resigned the superintendency of telegraph and went to the New York Elevated Railroad. Mr. Tinker succeeded him as superintendent of telegraph of the Baltimore & Ohio Railroad. Mr. Stewart is a man of about 45 years of age, and a popular officer.

GRAND RAPIDS, MICH.—Mr. Charley H. Thompson, W. U. press man, has just returned from a trip to Detroit, bringing home a blushing bride. Mr. T.'s many friends extend hearty congratulations. Mr. J. A. Weeks, from Detroit, has been lately added to our force here. He is a clever telegrapher and a candidate for matrimony. Mr. George Darlington is in dispatcher's office of the G. R. & I. R. R. Co. at this place. Mr. Walter W. Watson, one of the stalwarts from the Louisville & Nashville R. R., has just arrived in Fort Wayne, Ind., and is dispatcher's operator for Southern Division G. R. & I. Telephones and the Brush light are on the boom here. The city now proposes to build ten or twelve towers to light the streets and do away with the gas.

ALEXANDRIA, VA.—Mr. Dinwiddie, chief dispatcher V. M. Ry., has returned from the Springs, and the regular force at the main office of that company is unbroken. At Rapidan, Va., Mr. Preston has resigned, and James Duke now fills his place. Jimmy is a brother of the courteous and well-known "Duke of Alexandria," now chief operator A. U., Washington, D. C. Mr. Wilmer Padgett, for many years with the W. U. in Petersburg, and who was never so happy as while entertaining visiting operators, and regaling them with wine and huge accounts of the work of that office, has forsaken the business and is now agent of the Potomac Steamboat Co. at this point. The good wishes of a host of friends follow him. Mr. Otis Franks, of Alexandria, well known in Brooklyn R. R. circles, has left the C. & O. R. R., and gone to Dallas, Tex. THE WHAUP.

## BORN.

HACKING.—Aug. 1, to C. Hacking, Agent Dom. Tel., Grand Trunk Ry. and American Ex. Co., Listowel, Ont., a son. First edition.

## MARRIED.

POTTER—CLARK.—At Wellville, N. Y., Mr. T. W. Potter, Manager W. U. telegraph office, Salamanca, N. Y., to Miss Bettie Clark, of Wells-ville.

SCOTT—CHURCHILL.—August 1st, at Hobart, Delaware County, N. Y., by the Rev. E. White, D. Bryce Scott, Chief Inspector Gold & Stock Telegraph Company, New York, to Miss J. Addie Churchill, of Stamford, Delaware County, N. Y. No cards.

## DIED.

PURDY.—August 1st, 1881, at Lansing, Ia., Willie, infant son of W. F. Purdy, Manager W. U. Telegraph office, Lansing.

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Editor: F. UPPENBORN,

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## The Blanchard Foods. FOOD CURE

TRADE MARK  
(Concentrated and Artificially Digested.)  
A SURE NATURAL REMEDY  
For all forms of DYSPEPTIC, WASTING  
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For the BLOOD, BRAIN AND NERVES

THESE ARE LIQUID FOODS,  
PREPARED DIRECTLY FROM  
Wheat, Beef, Milk.

PRESCRIBED BY THOUSANDS OF EMINENT PHYSICIANS.

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Circulars free on application.

Dr. Blanchard's "Lectures and Essays" on Food, Price 25 cents. ALL DRUGGISTS:  
Address THE BLANCHARD MFG CO., 27 UNION SQUARE, N. Y.

DR. BLANCHARD CONSULTED FREE, IF POSTAGE IS PREPAID.

**The Tonic Extract of Wheat** improves weak digestion, cures sleeplessness, nervousness, constipation, loss of appetite and power. Especially adapted to repair brain waste from study, care or grief. Prevents and cures Bright's disease, diabetes, uterine weaknesses, rheumatism, neuralgia and all malarial diseases. Strengthens to overcome evil habits. Adapted for table use. \$1 each, or six bottles for \$5.

**The Fibrin and Wheat** restores the confirmed dyspeptic stomach and cures all forms of long standing nervous debility. Vitalizes weakly children and energizes old age. Sure preventive and cure for diphtheria, infantile diarrhoea and cholera infantum. \$2 each, or six bottles for \$10.

**The Beef and Milk** is for a very weak condition, and never fails to assimilate, however weak and irritable the stomach. Invaluable for nursing mothers. \$2 each, or six bottles for \$10.

**The Life Food** is to be taken between meals to relieve sense of "goneness." Never failing remedy for the alcohol, opium and tobacco habit, and for insanity and cancer in their early stages. \$1.50 each, or 6 bottles for \$7.50

## THE LAW BATTERY.

THE GREATEST  
TELEPHONE BATTERY.



## PATENT APPLIED FOR.

As a Telephone Battery, the "LAW" unquestionably excels all others, for the following reasons, viz.:

- 1st. The cost of renewing is about ten cents per year, as against more than one dollar per year for others.
- 2d. The cells are all exactly alike.
- 3d. They continue exactly alike.
- 4th. They never get out of order.
- 5th. The first cost is less than any other.
- 6th. The connections NEVER corrode.
- 7th. Every part of the battery is exposed to view, and if a fault exists it is instantly seen.
- 8th. The water cannot evaporate.
- 9th. The sal ammoniac cannot escape.
- 10th. The parts are not liable to break.

With the introduction of the "LAW," the objection to the use of a battery in connection with the telephone sinks into insignificance, for the care is nothing, of injury or interruption to the service there is none, and the cost of maintenance is less than one cent per month.

The battery is not an experiment; but an established fact.

It has been in use by the Law Telegraph Company for two years.

The materials used in its construction are the very best. No acids. No odors. Great recuperative power. Nothing to renew except the zinc and sal ammoniac—no porous cup, plaque or prism. Fits the standard size battery-box.

The Bell Telephone Co. of Missouri writes: "We have been testing the 'Law Battery' for several months in our telephone circuits, in competition with the various styles of Leclanché and Callaud batteries. For transmitter work the 'Law' excels all others in uniformity of action. As a result of the test referred to, we have concluded to adopt the 'Law.' We have upward of 250 cells now in use."

DIRECTIONS FOR USE.—Put in one-half pound of sal ammoniac and fill with water to the shoulder.

PRICE, \$1.25 PER CELL.

Manufactured and for sale by the  
**LAW TELEGRAPH COMPANY,**  
140 FULTON STREET, NEW YORK.

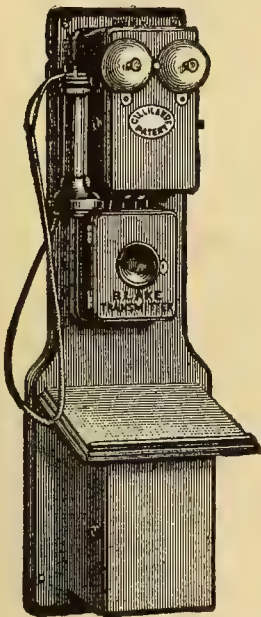
WILLIAM A. CHILDS, Manager.  
FRANK SHAW, Engineer.



# GILLILAND ELECTRIC MANUFACTURING CO.,

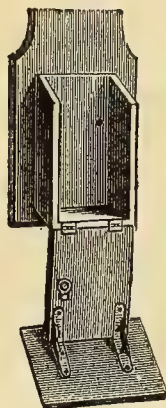
E. T. GILLILAND, General Manager,

INDIANAPOLIS, Ind.

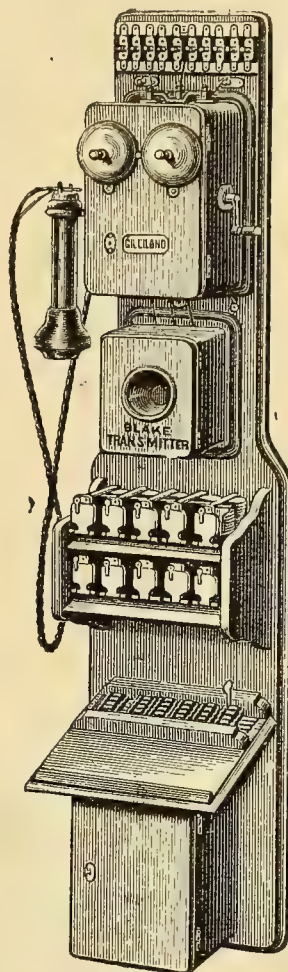


**STANDARD  
Magneto Bell.**

30,185 now in use.  
2,810 shipped in  
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Our latest improved BATTERY BOX has a value of prime importance in that the battery is exposed to view and easy of access in the setting up and cleaning. We furnish the Battery Box on all orders.



TEN-LINE COMBINATION SWITCH BOARD.

## 10-LINE and 20-LINE SWITCH BOARDS,

For the club system of small towns and villages.

INVALUABLE FOR

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Being complete, compact and handsome our

COMBINATION SWITCH BOARDS are universally used; the demand is extraordinary and continuous, giving satisfaction in every particular.

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# J. H. LONGSTREET,

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Instruments



And

Supplies.

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Our improved form of **CONDENSER**, neat, compact, and of any required capacity—for eliminating the spark and preventing oxidization.

These Condensers are made to an exact capacity for the work required, and have been

**ADOPTED BY THE RAPID COMPANY AND MANY OTHERS.**

We guarantee every Condenser. Prices very low, according to number of microfarads.

**Railway Telegraph Instruments, Line Tools, Wire, Insulators and Brackets.  
Batteries of Every Description.**

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**Telegraph and Telephone Apparatus and Supplies.**

THE BEST OF EVERYTHING AT BOTTOM PRICES.

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#### Peck's Patented Artificial Ear Drums.

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No. 115 Nassau Street, New York.

### THE JOHN A. ROEBLING'S SONS CO., TRENTON, N. J.

And No. 117 Liberty st., New York,  
Manufacturers of

#### GALVANIZED TELEGRAPH WIRE

OF ALL QUALITIES.

No. 6 Wire in  $\frac{1}{2}$ -mile bundles, 550 pounds per mile.  
No. 7 Wire in  $\frac{1}{2}$ -mile bundles, 470 pounds per mile.  
No. 8 Wire in  $\frac{1}{2}$ -mile bundles, 388 pounds per mile.  
No. 9 Wire in  $\frac{1}{2}$ -mile bundles, 330 pounds per mile.  
No. 10 Wire in  $\frac{1}{2}$ -mile bundles, 268 pounds per mile.  
No. 11 Wire in  $\frac{1}{2}$ -mile bundles, 216 pounds per mile.  
No. 12 Wire in  $\frac{1}{2}$ -mile bundles, 168 pounds per mile.  
No. 14 Wire in 1-mile bundles, 98 pounds per mile.

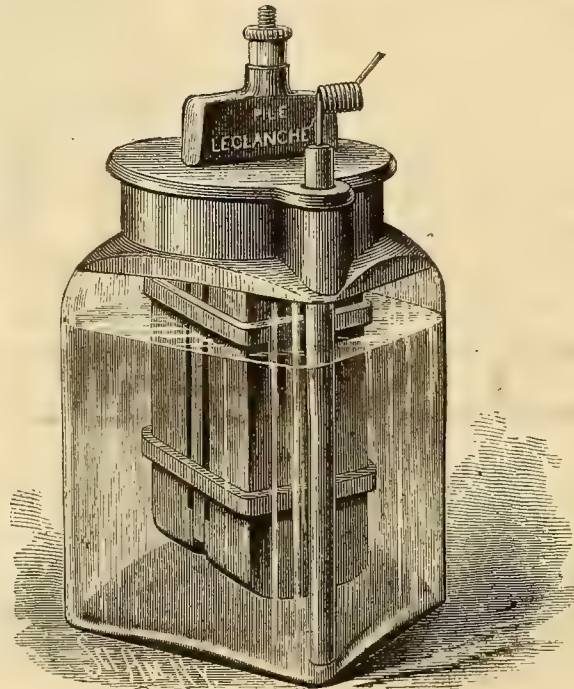
This Wire possesses the highest electrical conductivity, which is necessary to make Telegraph and Telephone Lines work with certainty and ease.  
Special attention given to

#### Telephone Wire,

for which No. 12 is the average size used.

### Leclanche Battery.

(PATENTED.)



"Prism Battery" Complete.

—THE—

### GREAT TELEPHONE BATTERY.

The Realization of

**SIMPLICITY AND EFFICIENCY**

#### In Electric Open Circuit Batteries.

Free from acid. Emits no odor. Does not get out of order. Lasts without renewal from six months to several years, according to use.

#### ADOPTED AND USED BY THE

American Bell Telephone Company.  
Metropolitan Telephone and Telegraph Company.  
Western Union Telegraph Company.  
Gold and Stock Telegraph Company, with their battery telephones.  
And by all the Telephone Companies and Exchanges in the United States.

The attention of the public is called to the new form of Leclanche Battery, in which the porous cell is dispensed with and for it substituted a pair of compressed Placques or Prisms, which are simply strapped to the Carbon (as shown in cut).

The Prism Battery is more easily and cheaply cleaned and renewed than any other battery. Beware of Infringements and Worthless Imitations.

Every genuine Leclanche Battery has the words **Pile-Leclanche** stamped on the carbon head, jar and prisms. All others are spurious.

"Prism" and Porous Cell Batteries for sale in any quantity. Zinc and Sal Ammoniac of superior quality.

#### The Leclanche Battery Co.,

40 West 18th St., New York.

## A. G. DAY,

MANUFACTURER OF

### Kerite Insulated Telegraph Wire and Cables.

OFFICE: 120 BROADWAY, NEW YORK.

Factory: Seymour, Conn.

The discovery of the insulating compound, known as Kerite, is the result of more than ten years of uninterrupted experiment and application, as well as twenty years' previous experiment and experience in the manufacture of India-rubber. About ten years of this time was spent in assisting Mr. Charles Goodyear in the experimental department, while perfecting his improvement in vulcanized India-rubber and its varied applications.

The necessities of the telegraph business requiring an indestructible insulation, stimulated me to the discovery and perfecting of my compound known as Kerite, which combines the great advantage of durability with perfect insulation.

Kerite insulation is proof against the action of the corrosive elements in the earth, air and water; and, where it has been practically tested, has proved its superiority to all other insulation.

### DURABLE QUALITIES OF KERITE.

It is not injuriously affected by the extremes of heat and cold, experienced in our climate, nor by length of exposure in the atmosphere.

It will endure long-continued heat below two hundred degs. Fahrenheit, while for short intervals it may be subjected to from two hundred and fifty to three hundred degs.; and it may be safely immersed in boiling water.

The action of water, salt or fresh, not only protects all its qualities, but very much improves its insulation.

It is also unchanged by being placed in the ground. Any corrosive elements in the earth do not act upon it; nor is it injured by the roots of plants, which soon destroy gutta-percha.

There are thousands of miles in use throughout the country, by Fire Alarm and other Telegraph Companies of all our principal cities.

It has been used largely in the city of New York, under all conditions and exposures for the last nine years.

Constant exposure to the sun and atmospheric changes are the severest tests that can be given it in practical use.

### Eminent Electricians and Practical Telegraphists

commend and recognize the Kerite insulation as superior to all others.

At the Centennial Exhibition at Philadelphia, Sir WILLIAM THOMSON, the eminent electrician and scientist, awarded to the

### Kerite Insulated Wire and Cables

A DIPLOMA FOR

"Excellence of the Insulation and Durability  
of the Insulator."

For sale by all dealers in Telegraphic Materials.

For further particulars, address

A. G. DAY,

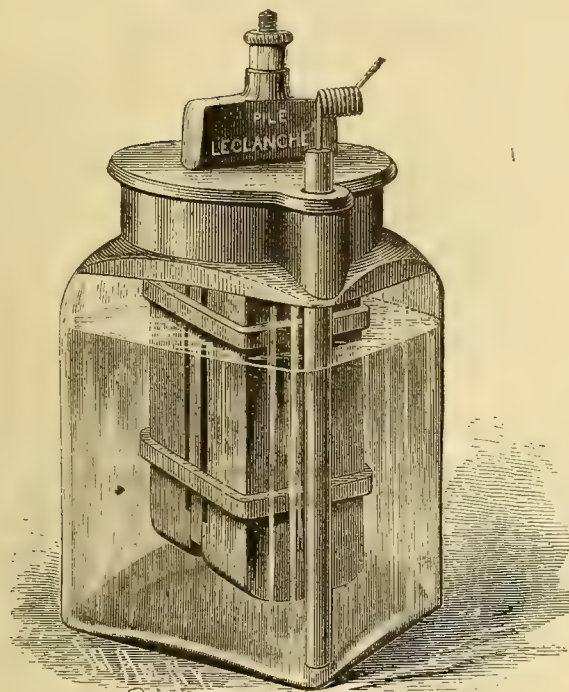
120 Broadway, New York

B. HOTCHKISS, General Agent



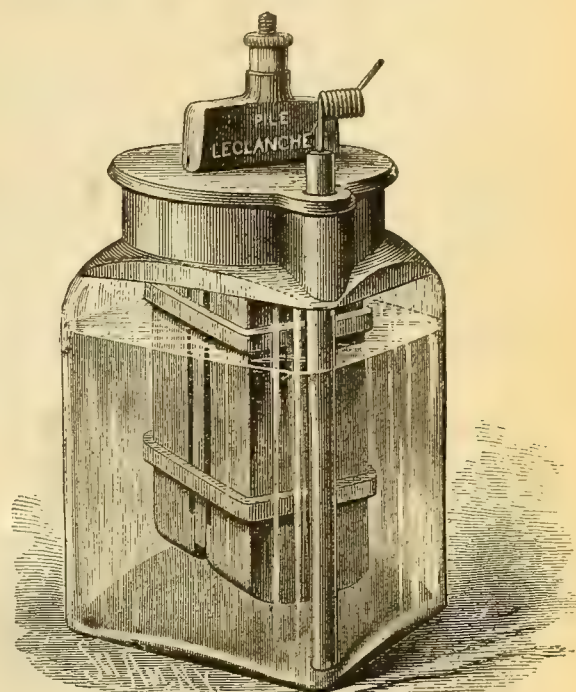
# THE LECLANCHE PATENT TELEPHONE BATTERY.

The Same Yesterday, To-Day and Forever.



PRISM BATTERY.

Having long since emerged from the pupa state, in which so many cheap imitation Leclanche batteries have already expired, or are now dying, this Battery is to-day firmly established as



PRISM BATTERY.

## THE ONLY OPEN CIRCUIT BATTERY IN THE WORLD

which can be kept in use for months without consuming itself by local action. Combining the greatest intensity and electro-motive force with the least resistance, its practical advantages have made it the most successful battery ever produced.

## GREAT REDUCTION IN PRICES

have been made since its general introduction into the United States, and it can now be bought for less than one-half the price it was formerly sold at. This, added to the fact that it is the best Open Circuit Battery ever made, has resulted in its becoming the most popular, as it is the most effective, Battery in the world. OVER ONE MILLION CELLS are now in use, and the demand for it is daily increasing. It is the LEAST EXPENSIVE, SIMPLEST, CLEANEST. REQUIRES NO ATTENTION. DOES NOT GET OUT OF ORDER. GIVES PERFECT SATISFACTION IN EVERY CASE.

**It is the Best for SCIENTIFIC AND EXPERIMENTAL PURPOSES.**

**It is the Best for MEDICAL PURPOSES.**

**It is the Best for HOTEL AND HOUSE ANNUNCIATORS AND CALL BELLS.**

**It is the Best for ELECTRIC BURGLAR ALARMS.**

**It is the Best for TELEPHONE TRANSMITTERS.**

The latest form of this Battery is known as the "PRISM BATTERY."

In this Battery the porous cup is dispensed with, and in its place is substituted a pair of compressed "Prisms," or plaques, which are simply attached to the carbon by means of two rubber bands.

The "Prisms" contain all of the materials heretofore employed in the porous cup, combined with others not before used, compressed into this compact and convenient form by powerful hydraulic machinery.

The advantages of this over the porous cup, or any other open circuit battery, are apparent :

1. All of its parts are visible, and in case of any derangement it can be seen at once where the difficulty lies.
2. The battery can be taken apart, cleaned, and set up again by any one, without special knowledge of electric apparatus.
3. But its most important feature is the comparative cheapness with which it can be renewed when the elements have become exhausted from long service : by simply substituting a pair of new prisms for the exhausted ones, the battery will be made as good as new.

This battery is particularly suitable for use with battery telephones, and, after having been thoroughly tested by the various Telephone Companies, has been pronounced by them, without exception, the most perfect battery for telephone purposes that has been made.

With their endorsement and the results of our own tests, which have extended over a long period, and have been most thorough in every respect, we feel warranted in recommending the new Leclanché Prism Battery to the public.

**We are prepared to furnish these celebrated Batteries in any quantities on exceedingly favorable terms.**

**SPECIAL DISCOUNTS TO THE TRADE AND TO TELEPHONE EXCHANGES.**

**L. C. TILLOTSON & CO., Sole Agents,**  
**5 and 7 Dey Street, New York.**



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## THE GIANT SOUNDER PERFECTED.

Patented Feb. 16, 1875. Most perfect, reliable, clear-toned; fine finish, and warranted the best working sounder in existence. Price, by mail, \$5 00.

## THE DELANY PATENT REVOLVING DISC,

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This key embraces the only positive remedy for sticking; obviates direct anvil pounding, and thereby prevents operators' paralysis. Legless, hard rubber base, nickel-plated, and the handsomest, most durable, and only perfect key manufactured. Price, \$5; by mail, \$5.35.

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CUT-OUT AND GROUND SWITCH COMBINED.

Guaranteed the best and cheapest in the world. Price by mail, \$1.25.

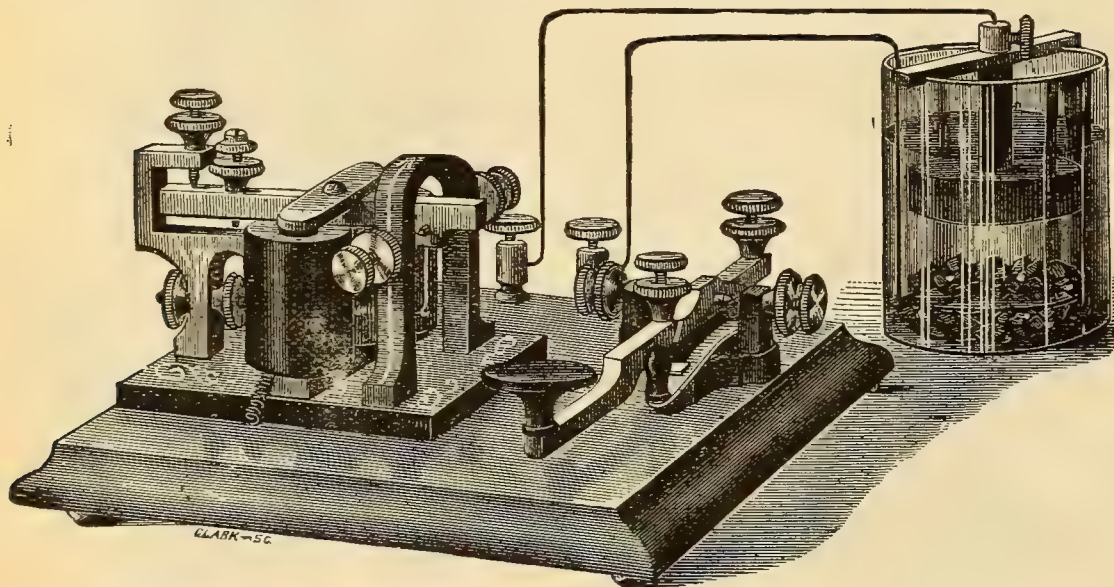
## THE CHLORINE BATTERY.

D. H. Fitch Patent, Sept. 16, 1879. For telephones, burglar alarms, call bells, etc. Price per cell, \$1.75.

## PREMIUM LEARNERS' APPARATUS.

ONLY \$5.00.

Not the Cheapest, but Guaranteed the Best!



The PREMIUM LEARNERS' APPARATUS AND OUTFIT comprises the famous "NEW GIANT SOUNDER, PERFECTED," and the "NEW CURVED KEY," placed upon a splendidly polished base, with a cell of Callaud Battery, Chemicals, Office Wire, and an excellent Book of Instruction, for \$5.00, when the money accompanies the order.

These instruments are the exact size and form of those upon which we received the highest award at the late Centennial Exhibition over all competitors. Everything reliable, and so guaranteed, or money refunded. Our Book of Instruction contains full and explicit information as to setting up the Battery, running of wires, etc.

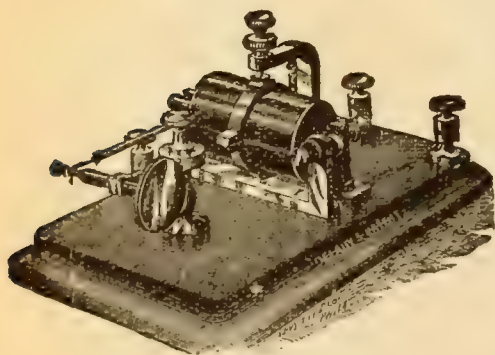
Price, Complete Outfit.....	Money in advance, \$5 00
" Instrument without Battery.....	4 20
" " wound with finer wires for lines of one to fifteen miles..	5 00
" Cell of Battery, Complete.....	80
" Instrument without Battery, by Mail.....	4 75
" Premium Sounder, Separate Base.....	2 50
" " Key,.....	1 75

All orders will receive our prompt and careful attention, and, to prevent delay in shipment, full shipping instructions with town, county, and State, should be given. Remittances should be made by P. O. money order, registered letter, draft or express, which will insure safe delivery. No goods sent C. O. D.

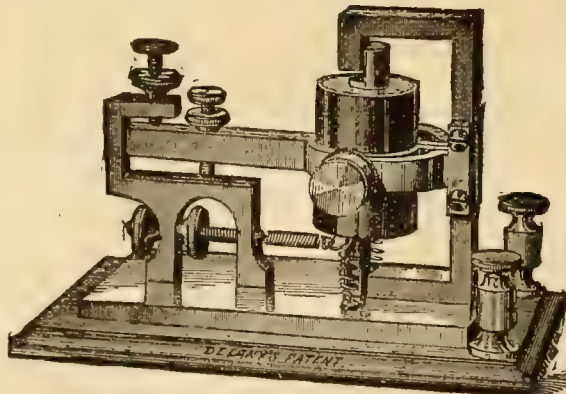
Send stamp for catalogues, price-lists, etc., for Telegraph Instruments and Supplies, Electric Bells, Electro Plates, supplies, and every description of Electrical Apparatus Manufactured and for sale by

PARTRICK & CARTER, 114 South Second Street, Philadelphia, Pa.

## THE DELANY RELAY AND SOUNDER.



RELAY.



SOUNDER.

The above cuts illustrate the Delany Patent Telegraph Relay and Sounder, now being manufactured and tested with a view to their general introduction on all Telegraph Lines liable to be affected by the Page Patent. These instruments are in all respects superior to any now in use.

Railroad companies and others desiring instruments for trial should apply to

**THE DELANY PATENT RELAY COMPANY,**  
61 BROADWAY, NEW YORK

Eminent Electricians and Practical Telegraphists

Throughout the World Acknowledge

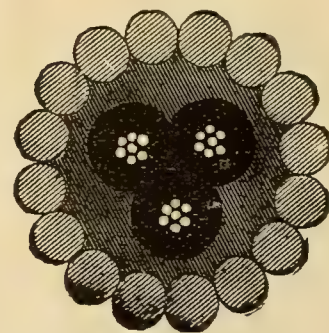
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to be the Cheapest and only PERFECT and RELIABLE

INSULATION FOR

Telegraphic Wires and Cables

OF EVERY DESCRIPTION.



**THE BISHOP**

**Gutta-Percha Works**

(SAMUEL BOARDMAN, AGENT),

Original and only Manufacturers in the United States of

GUTTA-PERCHA INSULATED

**SUBMARINE TELEGRAPH CABLES**

50 Regular Sizes—One to Ten Conductors.

**SUBTERRANEAN TELEGRAPH CABLES**

Hempen-Armored Covered.

**AERIAL TELEGRAPH CABLES,**

Lead or Hempen Covered.

ANTI-INDUCTION

**TELEPHONE (LEAD-COVERED) CABLES**

as used by the Metropolitan Telephone and Telegraph Company.

**TORPEDO CABLES,**

Recommended by the European and South American Governments.

**LEAD-COVERED CABLES,**

For Canal and Streamlet Crossings.

GUTTA-PERCHA

OFFICE WIRE, FUSE, LEADING AND CONNECTING WIRE,

for Subaqueous, Mining and all other Electrical purposes.

**MARKS' COMPOUND INSULATED WIRE,**

For Office, Outdoor, Underground and Battery Use.

**G. P. OFFICE WIRE, COTTON-COVERED.**

ALSO HAVE ALWAYS ON HAND

WIRES OF EVERY VARIETY OF INSULATION,

Magnet Wire, Telephone Flexible Cords, Flexible Elevator Cables, Electric Cordage,

**BURGLAR-ALARM AND ANNUNCIATOR WIRE,**

Electric Light Wire, Cordage and Cables, Lead-Covered Wire, and Every Description of

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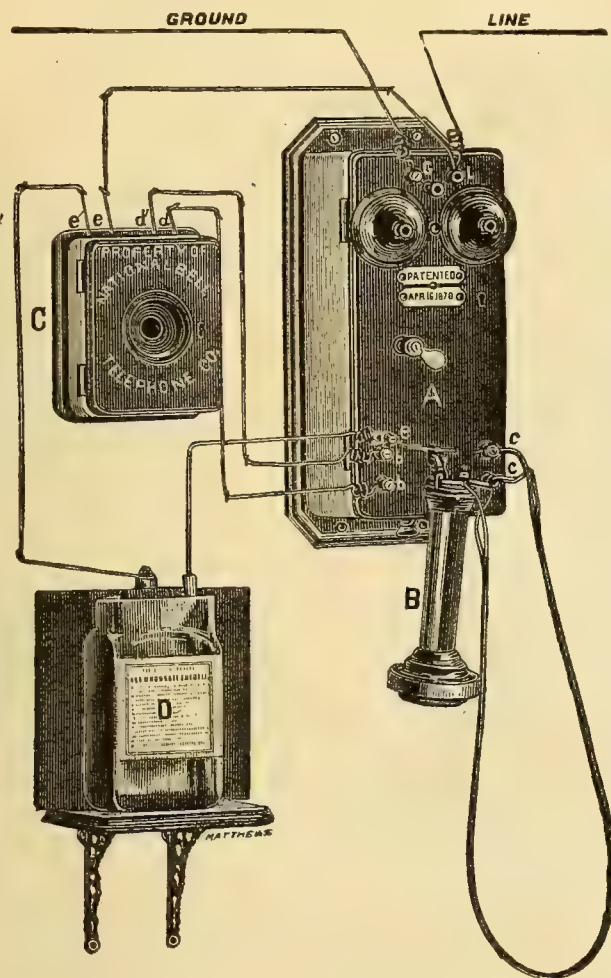
420, 422, 424 and 426 East 25th street, New York,

OFFICE AT THE WORKS.



## The American Bell Telephone Company.

W. H. FORBES, President. W. R. DRIVER, Treasurer  
THEO. N. VAIL, General Manager.



This Company, owning the Original Patents of Alexander Graham Bell for the Electric Speaking Telephone, and other patents covering improvements upon the same, and controlling, except for certain limited territory, under an arrangement with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, the American Speaking Telephone Company, and the Harmonic Telegraph Company, the patents owned by those companies, is now prepared to furnish, upon application, either directly or through any of its agents, Telephones of different styles, and applicable to a variety of uses.

This company desires to arrange with persons of responsibility for establishing

## District or Exchange Systems,

in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

## PRIVATE LINE AND CLUB LINE

systems, for business or social uses. Also to introduce the telephone for

## SPEAKING TUBE

purposes, for which instruments will be leased for a term of years at a nominal rental.

This Company will arrange for telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

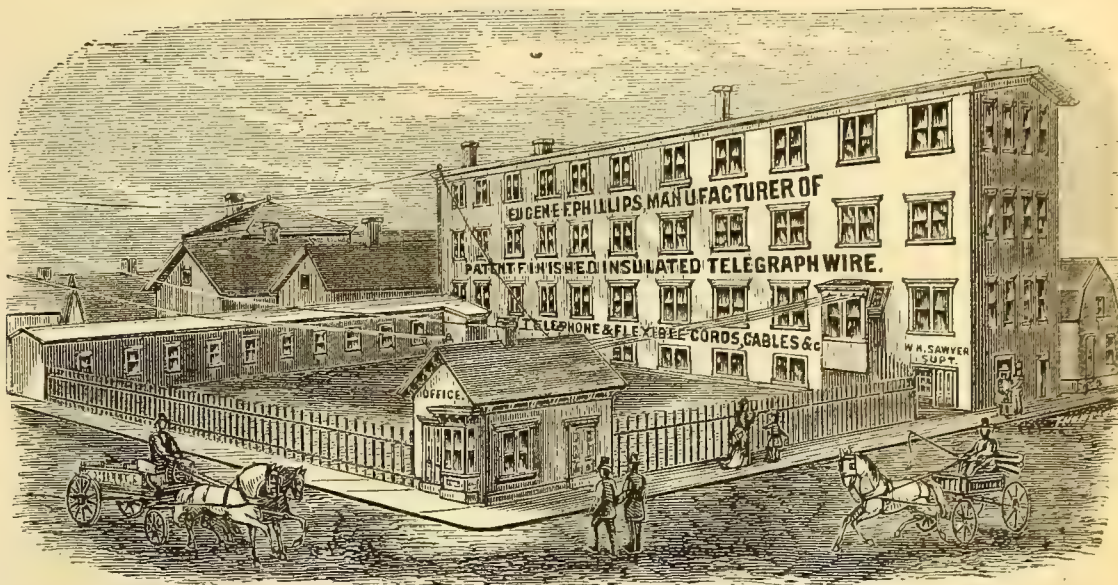
We respectfully invite attention to this matter, and any further information relating thereto can be obtained from the Company,

NO. 95 MILK STREET, BOSTON, MASS.

All persons using Telephones, not licensed by this Company, are hereby respectfully notified that they are liable to prosecution, and for damages for infringement, and will be prosecuted accordingly to the full extent of the law.

# EUGENE F. PHILLIPS,

## PROVIDENCE, R. I.



MANUFACTURER OF PATENT FINISHED

## Insulated Telegraph Wire

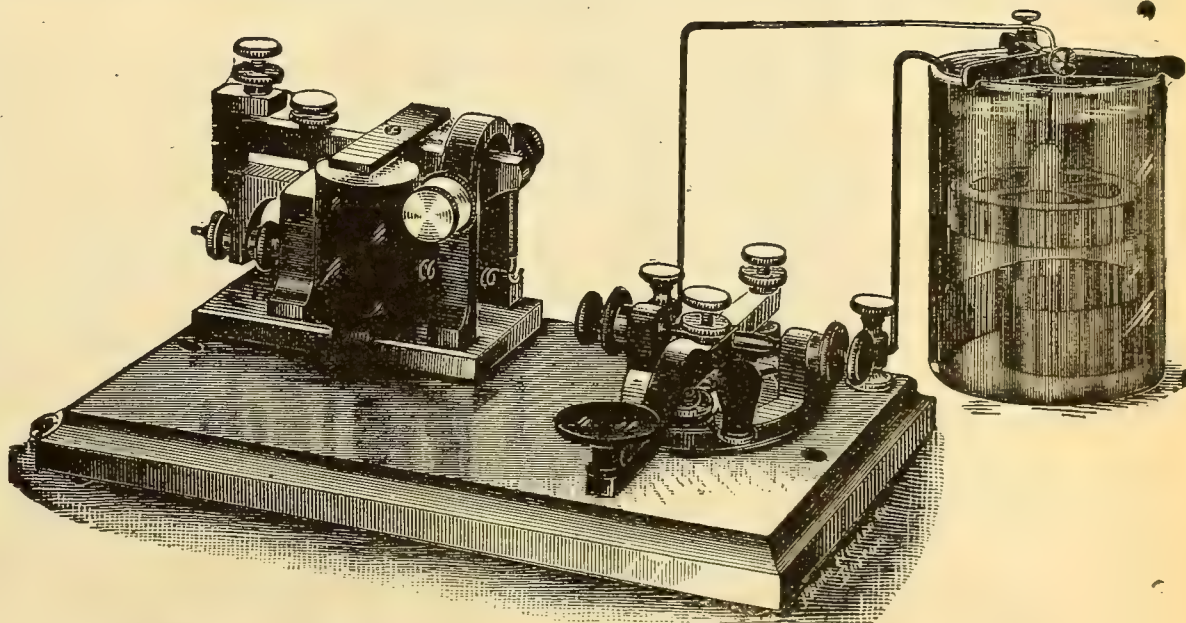
TELEPHONE AND ELECTRIC CORDAGE.

### MAGNET WIRE,

PATENT RUBBER-COVERED WIRE, BURGLAR ALARM AND ANNUNCIATOR WIRE, LEAD-ENCASED WIRE, CABLES, ETC.

W. H. SAWYER, Electrician and Superintendent.

## JEROME REDDING & CO.'S LEARNERS' INSTRUMENT.



PRICE FOR THE COMPLETE "GEM" LEARNERS' OUTFIT, \$4.20.

Consisting of the above large-sized Sounder and Key, a good Cell of Callaud Battery, one roll of Office Wire, Book of Instructions, Chemicals, etc. The only low-priced Learners Instrument made that has nicely finished BRASS Sounder and Key lever, with perfect adjustments for both.

Price for Complete Outfit.....	\$4.20	Price for Instrument alone, by mail, post-paid.....	\$4.00
" Instrument alone.....	3.40	" Instrument alone, for lines 1 to 15 miles....	4.00
" the whole outfit (except Glass Jar) with Key and Sounder separate, by mail, post-paid.....	4.80	Price for Instrument alone, for lines 1 to 15 miles, by mail, post-paid.....	4.50

SEND FOR CIRCULAR.

JEROME REDDING & CO.,

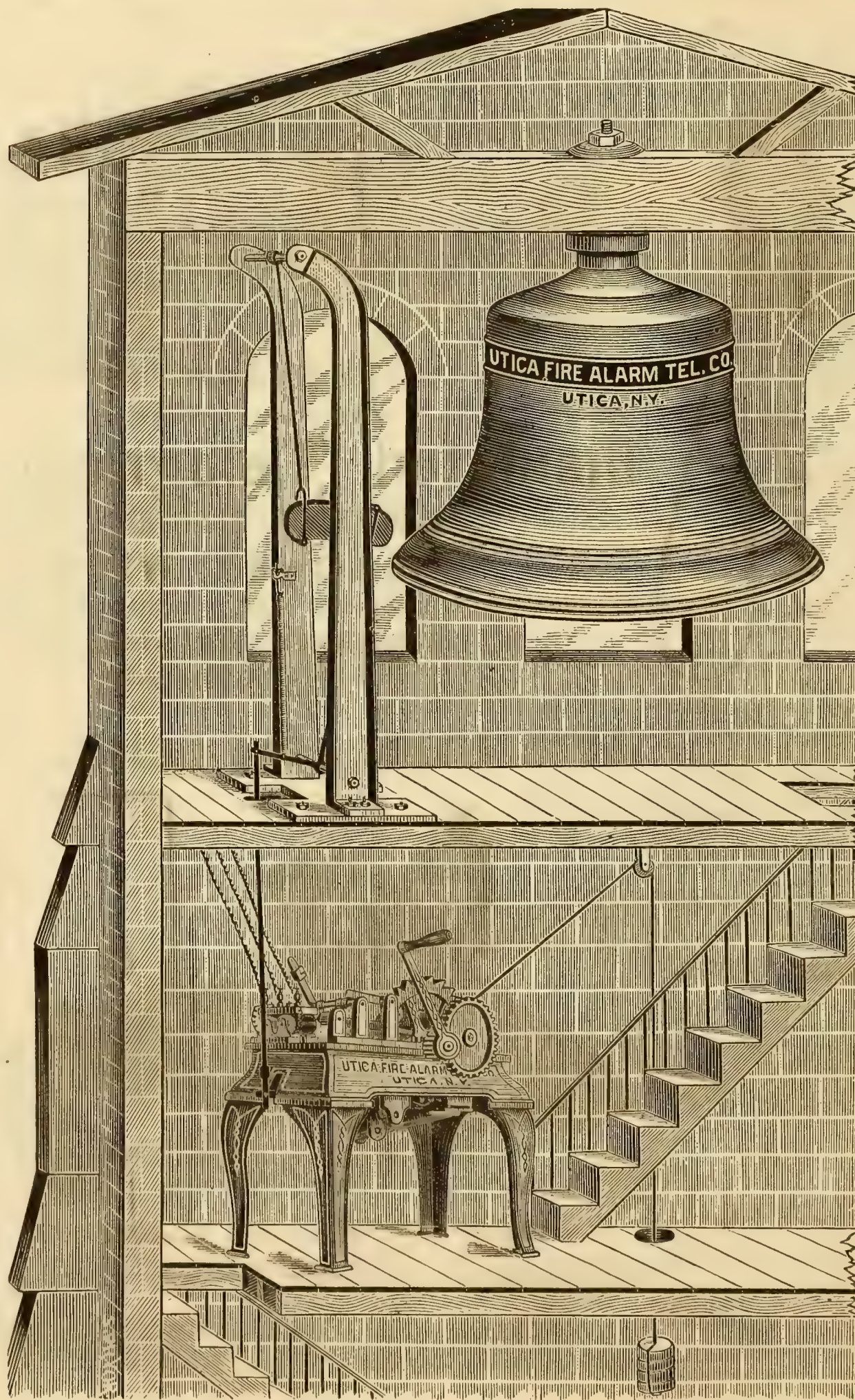
Manufacturers of Telegraph and Electrical Supplies,  
No. 30 Hanover Street, Boston, Mass.



# The Utica Fire Alarm Telegraph Company,

Head Office and Manufactory, 106 and 108 Liberty Street, Utica, N. Y.

TELEGRAPH, TELEPHONE AND FIRE ALARM  
APPARATUS AND SUPPLIES.



TELEGRAPH, TELEPHONE AND FIRE ALARM  
APPARATUS AND SUPPLIES.

**ELECTRO-MECHANICAL TOWER BELL STRIKER.**

ADDRESS

THE UTICA FIRE ALARM TELEGRAPH COMPANY,  
Albany Branch, 25 Steuben Street, Albany, N. Y.

106 and 108 Liberty Street, Utica, N. Y.

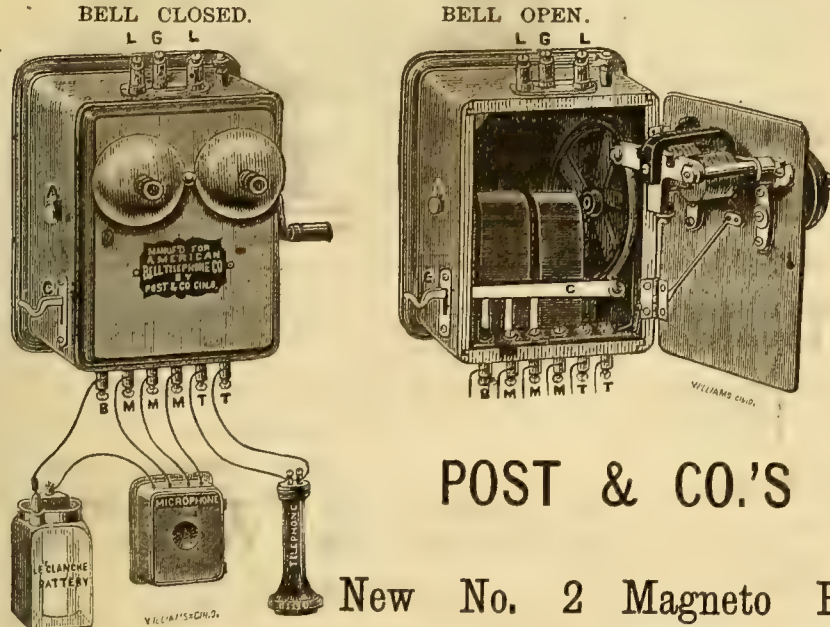


# TELEGRAPH AND TELEPHONE DEPARTMENT, POST & COMPANY.

LICENSED MANUFACTURERS OF AMERICAN BELL TELEPHONE CO.

Manufacturers of all kinds of Telegraph, Telephone and Electric Light Supplies.

## NEW NO. 2 MAGNETO BELL.



POST & CO.'S

## New No. 2 Magneto Bell.

CINCINNATI, Aug. 1, 1881.  
We have just perfected our New No. 2 Automatic Magneto Bell (as per cuts), and are now ready to furnish same to Exchanges and Agents of the American Bell Telephone Co. We guarantee same to ring over 10 miles of wire. We have given great attention to the construction of these bells and they will be found just the bells for short lines of all kinds—will gladly send out one bell or a case of 6 on approbation, to be returned if not satisfactory.

We call especial attention to our new switch-boards as being simple and substantial, NO CORDS TO GET OUT OF ORDER. We make them from 6 lines each up to any size wanted. Send for cuts of same. Our new battery boxes open down the front, so as to get at battery easy. We make them two sizes, for each size bell, also very fine ones for parlors and fine offices. Samples of our bells, etc., sent on application. Agents for Roebing's line wire. A full line of OFFICE WIRE BRACKETS, INSULATORS, etc., on hand at all times at VERY LOWEST prices. Send for catalogue and prices.

## Standard No. 1 Magneto Bell, 20,000 in use.



Below we give a few important changes we have just made in our Standard Magneto Bells, making them the strongest and best Bells made. All of these important points fully covered by Letters Patent.

1st. Our Horse Shoe Magnets, large and small, are made to lift six times their weight; none are passed unless this result is obtained. This strength is secured by means ONLY KNOWN TO US.

2d. The cylinders of our engine are metallic and inclosed so as to prevent escapes of any kind, and also prevent dust from accumulating on the armature, which in a very short space of time would wear out and destroy the GENERATING POWER of the ENGINE. Other makers NECESSARILY leave the sides open.

3d. Our switch is so constructed that it prevents lightning in ANY FORM from ENTERING THE MICROPHONE, by cutting out the primary and secondary coils entirely—a feature that no other box now manufactured has, and fully covered by our letters patent.

4th. We make the Automatic Hook Bell to use with the PONY CROWN TELEPHONE. NO EXTRA CHARGE. No posts on front. Connection made at top and bottom of Bells.

5th. All Bells tested to not less than 12,000 ohms resistance.

6th. We have so arranged the RINGER, GENERATOR, and FRAME work of our Bells that they can be easily adjusted without disturbing the wires in any manner or moving the base-board or bell.

7th. Test of Standard Magneto Bells at Exposition, Oct. 1, 1880. Williams Magneto Bells rang through 11,800 ohms resistance, equal to say 370 miles No. 12 wire.

Post & Co.'s Magneto Bells rang through 19,775 ohms resistance, equal to say 625 miles No. 12 wire.

The record of this test is taken from Report of the Jurors in Class 77 on Electrical Instruments, and NEEDS NO COMMENT, as it shows our Bells have nearly double the strength of the others. The Gilliland Bell did not come in, although APPLICATION had been filed to enter same for competition. The jury awarded our Bell the HIGHEST PREMIUM—A SILVER MEDAL. Respectfully,  
POST & COMPANY.

POST & COMPANY, CINCINNATI, O.

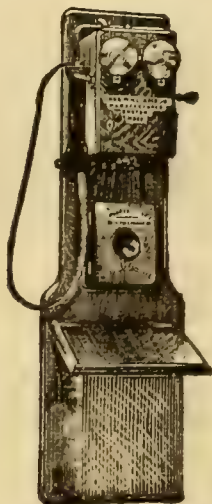
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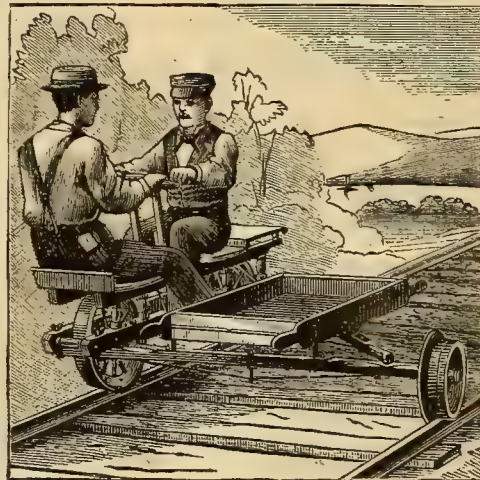
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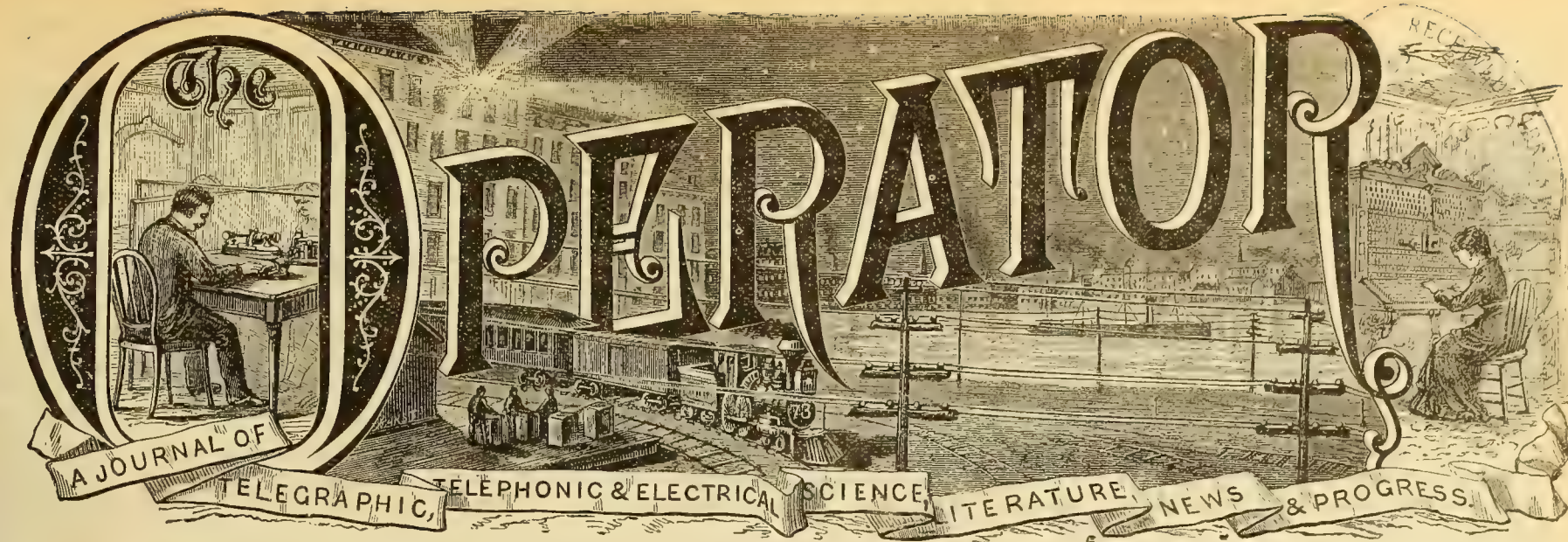
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VOL. XII.—No. 17.

NEW YORK, SEPTEMBER 1, 1881.

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### ANACREONTIC.

List me now, I plume a knight.  
Lo! No faded antique wight—  
Spindle-shank and ample shield,  
Sneaking from the battle field—  
But my knight of later day  
Claims the poet's bravest lay.  
Proudly tossing to the rear,  
Waves the goose quill from his ear;  
Helmetless, his shining nub  
Braves th' official stuffed club.  
Ne'er he plated armor wears,  
Solely for a shield he bears,  
'Neath the haughty archèd lip,  
One small patent office clip.  
Lance nor spear nor sword wants he,  
Give him but the brassy key;  
Thirsts he not for bleeding corse,  
Merely would he slaughter Morse.  
With sulphuric acid bright,  
Pledge my telegraphic knight!  
Brim the cell of gravity;  
Drain the jar and mirthful be  
Quick'ning with 'lectricity.  
Now once more come pledge my knight,  
Lo! no faded antique wight—  
Spindle-shanked and ample shield,  
Sneaking from the battle field—  
But a knight of later day,  
Worth the poet's bravest lay.

FRANK C. PRESCOTT.

OAKLAND, Cal., Aug. 18, 1881.

### The Paris Exhibition Well Under Way.

[From The Operator's own Special Correspondent.]

On the day preceding the opening of the exhibition all work was ordered suspended and a general clearing up requested, that due respect might be paid to President Grévy and a few high state officers who wished to make a private inspection before the general public were admitted. The gentlemen arrived at 10.30 A. M. and, under the guidance of the French Commissioners, leisurely sauntered through the hall, stopping here and there to inspect some object of particular interest, and continued their visit until about noon. With the exception of some music by a military band, there was no display or ostentation of any kind, and, had the dignitaries not been pointed out, I would not have known that they were in the building. During the remainder of the day a favored few were admitted on complimentary tickets and on the following morning the doors were thrown open to the public. Considering what a fine opportunity there was for an imposing opening ceremony, we foreigners were surprised at the extreme simplicity of the affair.

The Executive Committee of the U. S. Commissioners, consisting of Dr. F. L. Freeman, of the Patent Office; Capt. D. P. Heap, U. S. A., and Lieut. T. C. McLean, U. S. N., called a meeting of the American exhibitors on Aug. 5, to ascertain how nearly ready they would be to open on the 11th, and also to consider the question of decorating the space allotted to them. The Commissioners thought that the American section had a "flat" appearance, or, as Dr. Freeman expressed it, looking at our section from the galleries, and comparing it with the display being made by other countries, was like looking into a hole. The reason for this is that our exhibit is of a different nature from the others, which are made up largely of railroad signals, post office systems, requiring the use of structures of some kind, and other apparatus that have glass houses or canopies over them, while the American exhibit contains many dynamo machine and telephone and telegraph instruments, and collectively does not require the use of very imposing edifices to show them off to advantage. The Commissioners, however, "filled up the hole" by planting a high pole at each corner of the section and hanging a paper cornice around the span, supported at intervals between the high poles by shorter ones made up of bundles of signal service field telegraph poles, and the whole thing abundantly decorated with American flags and eagles. Although by no means proud of the small exhibit from our country, that *could* make such a great show, our patriotism is satisfied to some extent in the knowledge that visitors will have no trouble in finding us.

It is unfortunate that the subject of the Exposition was not brought before the last session of Congress, and an appropriation secured to cover general expenses. The money for the decorations and the expenses of the Commission was raised by an assessment levied upon the exhibitors of 30 francs for each square metre of space they use, which in some cases was quite a tax. There seems also to have been a lack of general information in America on the subject of the Exposition, which may account for our small delegation. Many thought that only electrical novelties were to be shown, and were ignorant of its general and historical nature. Prof. Gray, for instance, exhibits nothing but his harmonic system of telegraphy, while he could have filled a large room with his experiments and inventions, dating back over fifteen years. Edison, who had agents here, was in a position to be better informed, and fills up two rooms with his

productions. Everything he has invented is on exhibition, and his rooms attract much attention. Unhappily, they open off the gallery and are some distance away from the rest of the Americans, so that we do not get the full benefit of his presence.

The nave of the palace has been divided into two parts, one half being set apart for foreign exhibitors and the other for French. In these two divisions are conspicuous four large pavilions—that of the French Ministry of Posts and Telegraphs, which is the largest of all; that of the London Post-office, that of the city of Paris, and finally that of the French and foreign railways. In the middle of the nave, on the boundary line between the French and foreign divisions, an immense tower supports an electric lighthouse. At the foot of the door is a fountain and rockwork. By an ingenious method of lighting, the water is rendered luminous, so that the fountain spurts forth, as it were, liquid diamonds. One half of the building is glazed with common glass and the other half with black glass. In the latter section the electric light is introduced. Seeds of the same plants, planted in the same mold and at the same time, are exposed to the two forms of light, the sunlight and that of electricity, to see under which conditions they will grow the more rapidly.

One of the more noticeable inventions on the ground floor is the automobile safety barriers of the Austrian railways, which will fall as trains approach and recede. The electrical balloon, small and white, with its tiny sail has a dove-like appearance. Its flight appears uncertain, but its inventor believes that he has succeeded in greatly simplifying aerial locomotion and rendering it safe and certain. In the pavilion of M. Cochery, French Minister of Posts and Telegraphs, six operators, working a single wire, transmit six different dispatches, operating on little key-boards with five wire keys and with arbitrary signals. What they telegraph comes out printed, but the whole staff cannot turn out between them more than one hundred and twenty-five words a minute, which, as compared to the Edison apparatus, is as the old-fashioned slow coach to steam locomotion. An electrical machine operates in the Edison exhibit, which, manipulated by four operators, telegraphs at the rate of 1,200 words per minute.

Among other startling things in the British exhibit is the Muirhead quadruplex *in operation*. The American Union Company had two sets of these instruments, but, either from lack of skill on the part of our electricians, or for some better



raison, they never could be made to work.

From the galleries overhead float the blended banners of the nations, the Stars and Stripes, the Union Jack, the red, white and blue of France, the red, yellow, and black of Belgium, the yellow and red of Spain, the yellow and black of Russia; and strangest sight of all, the red, white and black pennon of Germany hangs for the first time in eleven years in peaceful friendliness beside the tricolor. The German flag was last seen in Paris on the lances of the Uhlans, as they rode down the Champs Elysées, ten years and more ago. Among the flags are set lamps shaded with ground-glass globes, that glow as pearls of flame with the imprisoned fire of the electric light.

The up-stairs galleries alone contain wonders enough to compose an ordinary exhibition. These galleries are divided into twenty-eight rooms, each of which is devoted to some special application of electricity, and each illuminated by a different system of electric lighting. In the nave all the systems of lighting operate simultaneously in producing a general effect; in the upper rooms the public is able to judge each system by itself.

The first of these twenty-eight rooms contains pictures and objects of art illuminated by Clère's sun lamp. The second has been transformed into a theatre. In this theatre the electric light is used for footlights. The scene shifting and lighting are done by electricity. A knob is pressed and a stage decoration is changed. On the first trial of the machinery there were some hitches, and a little girl had a narrow escape from being killed by the fall of an antique cross in a market place. Two rooms are fitted up to represent a complete French dwelling apartment or flat—salon, dining room, bedroom, kitchen, bathroom—in which are exhibited all the appliances of electricity to domestic uses. Vessels are raised from the pantry and let down by electricity. An electrical lustre is suspended over the dining table, and the marking board of a billiard table is worked by the same agency. It gets through the tasks of many servants noiselessly and with the precision of clock-work. The automatic electrical sewing machine of Olivier is very elegant and useful. It costs little, and the force generating the electricity can be provided to do ten hours' work at an expense of fifty centimes daily. While the seamstress holds the cloth she can, if she pleases, be noiselessly fanned.

Rooms 7 and 8 are divided into six elegant little salons. Wires put these salons in communication with the Opéra and Théâtre Française, and by means of telephones the performances of these two theatres are heard, even to the smallest details. The telephone does not lose any sound—the applause, the footsteps of the actors, nor even the noise of the moving of a chair. The only parts of the performance that the telephone cannot transmit are gestures of the actors and the scenery.

No. 9 contains electric and magneto therapeutic appliances; No. 10, fire alarms and Sauter & Lemonnier's lamps; No. 11, photography; No. 12, Gramme lighting system; No. 13, Siemens' lamps and instruments of precision; Nos. 14, 15, 13 and C, general and accessory telegraphy. The middle of the galleries contain various exhibitions—the display of the General Telephonic Company, incandescent lamps of the Heran Maxim system, Jaspar, Liège and Anatole Gérard burners and Thomassi lamps; No. 17 contains a collection of piles; No. 18, a retrospective exhibition of the instruments of Volta, Galvani, Armstrong, Ampère, etc.; No. 20, electrical clocks and time-keepers and Gibbs' lamps; rooms 19 and 20 contain a reading room and bibliographical exhibition, lighted by the Lontin and Daft systems; room D is a lecture hall, lighted by the Swan and Brush methods. The remaining rooms have been assigned to Edison.

The machines and apparatus on exhibition are not yet all in working order. Of course, there are many specimens of electrical architecture, such as primitive induction coils, old fashioned dynamo-machines, dial telegraphs, etc., that have all been described and laid away on the shelf years ago. They make their appearance now like things of the past come to mark the progress of time. Beyond having an historical

interest, they have little value. Among the number is the first telephone made by Philip Reiss in 1861, and described at length by Prescott.

On August 18 the Superior Committee held a meeting to organize a jury to make the awards. There are 1,800 exhibitors, of whom 600 are foreign and 1,200 French. In spite of this difference, the committee decided that the jury shall be equally composed of French and foreign members. Each section will, therefore, appoint a number of jurymen in proportion to the importance of its exhibit. The Committee decided to place at the disposal of the jury 50 gold medals, 200 of silver and 500 of bronze.

A fire, attributed to a defect in the fitting up of some incandescent lamps, broke out on Thursday, Aug. 25, in the reading-room of the exhibition. The alarm was quickly given and the fire was extinguished before it had spread far. In attempting to tear out the wires with his hand a fireman was twice knocked down. A scientific commission, headed by M. M. Du Moncel and Breguet, made an examination of the connections of the various exhibitors and there is now no further danger to be feared.

The experimental lighting up of the exhibition took place on the evening of Aug. 26, M. Gambetta, President of the Chamber of Deputies, being present. The combined illumination of all the various systems in the area of the Palace of Industry had not, contrary to expectation, a blinding effect. The spectacle, however, was very fine.

There is an electric lamp for about every square metre of space in the building. Admittance to the night exhibition costs 1f. 50c., and to the day exhibition 1f. Besides lighting up the grand staircase and his own section, Edison proposes to place a number of his incandescent lamps in some of the neighboring concert gardens in the Champs Elysées. It is not known whether his ramifications will extend as far as the Jardin Mabille, which is quite near, but it is hoped not.

A track has been laid for the Electric Railway, of which we have heard so much, from a point on the Place de la Concorde into the building, a distance of perhaps an eighth of a mile. In the German experiments both of the rails are used as conductors, and are, consequently, heavily charged with electricity. Horses and cattle, in crossing these tracks, sometimes receive very heavy shocks, and the trouble has become so serious as to take the form of a real objection to the use of the system. An iron rod has been hung on 12-foot poles along one side of the track from the Place de la Concorde. This rod is used as one of the conductors, a small car running along it, connected by a wire to the main car, which, in turn, passes the current into one of the tracks and the earth. This means may overcome the objection of having both rails charged, but it seems to be a cumbersome way of doing it.

One evening last winter an operator, who is at present employed at 195 Broadway, sought a bachelor's usual solace after dinner in his pipe. He packed the tobacco into the bowl solidly and stretched himself out for half an hour's quiet comfort. After the first few puffs the ashes in the pipe bowl had risen over its edge and were in danger of falling upon the carpet, when the smoker, not wishing to burn his fingers, and being a young man of expedients, drew one of those rubber-handled Western Union styluses from his pocket to pack the ashes down. He noticed that before the rubber touched the ashes small pieces of the latter flew to meet and adhered to it. He then remembered what he had read on the subject and saw that it was only an illustration of the old experiment that hard rubber and flannel rubbed together electrified the former so that it would attract light bodies. In pulling the stylus from his pocket there was friction enough between it and the flannel of his vest to charge the rubber and cause the above result. Our friend then performed several other old but interesting experiments with his stylus, and finally made up his mind that he knew all about it and laid it away. Like many other men, he did not know that the idea, properly developed, was worth a fortune to him.

There is on exhibition here a machine, just patented, called the Electric Middlings Purifier. It is designed to separate flour from the wheat shells after the bolting process has been gone through with. The residue, which consists mostly of the shells from the

grains of wheat contains also a good deal of flour which cannot be separated by the ordinary process. It is called middlings, and is sold for horse feed, and sometimes a low quality of bread is made from it. The Electric Purifier has seven cylinders of hard rubber revolving over a sort of tray, so arranged that the middlings gradually work from one end of the tray to the other and in the journey pass under each of the seven rollers. Over the upper side of each roller is fastened a piece of sheep skin with the wool side pressing against it. As the roller turns, the friction between it and the wool causes it to become electrified and as it passes over the middlings the light pieces of shell, being attracted, fly up to meet it and adhere to it until they reach the opposite side, when they meet a light scraper, which rubs them off. They then drop into a small slide and are carried away. The flour, being heavier, remains in the tray until the lower end is reached, when the impurities having been removed by some one of the seven electrified rollers it is run off and saved. The principle governing this process is exactly the same as that existing between the rubber handle of the stylus and the tobacco ashes. It has been suggested to the gentleman having charge of the purifier that cat's skin might be an improvement over sheep's skin for electrifying purposes. It presents the advantage, also, of being plenty, cheap, and of providing a use for cats.

#### The Telegraphic Situation—That "One Man in Charleston" Heard From Again.

When this paper ridiculed the stock-jobbing cranks who persisted in taking the Western Union monopoly—or consolidation, or whatever it is—into court, intending to break the bonds of consolidation in that unfair manner, and when we advocated new lines as the only legitimate way to compete for public patronage, we were sure that we had struck the key-note to the only scheme that could result satisfactorily to the commercial men of the country. The managers of the late American Union Company gave us some good lessons in the organization of telegraph companies, and, now that the invocation of the law has been wisely abandoned, the sensible portion of the "Anti-monopolists" has begun to profit by the teachings of Mr. Gould and his subordinates.

In the meantime some of the local managers of the Western Union seem to have done all in their power to promote the success of the embryo opposition. By attempted reductions of salary and increasing hours of labor, they drove some of their best men away, "cheap" ones being hired in their places, all of which has gone a long way toward alienating the loyalty of the operators and the confidence and patronage of the general public.

We have already reported the holding of public meetings to censure the Western Union service; we have reprinted extracts from the Atchison (Kansas) *Globe*, the Kansas City *Journal*, and other papers, all going to prove that if the company wants its telegraphing done satisfactorily to the public it must deal fairly with its men. We have now to reëcho the cry from far-away Utah. The Ogden (Utah) *Pilot*, of the 15th of August, says:

"We are reliably informed that the scarcity of first-class telegraphers is something unprecedented, and those Western Union managers who, under the new regime, have endeavored, in hiring third-rate men, to curry official favor by reducing expenses, now find themselves in a sorry plight, being unable to handle their business with anything like satisfaction to the public or the head managers at New York, and are being called to account therefor. The Ogden office is an exception to the above, good wages being the rule at this point. But at Kansas City and Omaha the "Hams" (telegraphic vernacular for poor operators) are in the ascendant and, through incompetent work, are provoking indig-



nation and unfavorable criticism from the press and the public."

From Minnesota we hear, through the St. Paul *Dispatch* of August 15, that

"A gentleman who has had a great deal of trouble regarding the transmission of his business between this office and eastern points, remarked to a *Dispatch* representative the other day that the Western Union Company pursued a very short-sighted policy in the management of their business at St. Paul. They have neither well-constructed lines nor men in their office competent to transact their business. They hire men at a small salary to operate their instruments, and the result is that every month they lose an amount of money sufficient to pay for almost double the force they now employ. \* \* \* The gentleman mentioned is connected with the press of St. Paul, and is the correspondent of the most influential eastern paper. Matter which he files in the early hours in the evening is frequently delayed, because of the state of affairs mentioned, until it is too late to forward it, and the company thus loses the business."

From the Montevideo (Minn.) *Leader*, of Aug. 14, we have:

"Three instances in view. The first, that of a telegram which was sent from Stillwater to St. Paul (20 miles) at 5 o'clock in the evening, asking for a fire engine to assist in saving a large lumber establishment in that city, which was on fire and threatened a conflagration. But, notwithstanding the fact that a city was in danger and needed prompt relief, the telegram, sent at 5 in the evening, was not delivered until 9 o'clock the next morning. The second relates to a case in this city where a child was very sick. The parents presented a message to the operator at this office about 6 o'clock P. M., and paid full rates in order that it might be delivered that night. It was urgent, and directed that a physician be surely sent the following day. Mark the result: The message was delivered the next day at 9:30 A. M., one and a half hours after the train left for Montevideo, although the operator assuredly states that the message was put through that night. The fault then was in the non-delivery of the message after its receipt in St. Paul. The third case is where a message was taken to the office in Granite Falls, Sunday week, to be sent to Minneapolis, informing a father of the death of his child and asking him to come by Monday morning's train. The sender was assured the message would be sent that night. Result: It was put through the next day in the afternoon. Now, we submit that this is an imposition as well as an injustice. A person may be lying at the point of death and the services of a physician be needed to save the life of that person, and yet if a telegram is handed in and paid for, with the understanding that it be immediately transmitted, it does not receive as much, and sometimes not the half, attention as a message announcing the decline or rise of the hundredth part of a cent on a bushel of wheat. The above cases are certainly in the nature of a breach of contract, and if there is no redress we would suggest the enactment of a law making such negligence, either upon the part of the company or the operator in its employ, a penal offence, punishable by fine and imprisonment, or both."

Even an English paper, *Design and Work*, says:

"The Western Union operators are beginning to envy their English *confrères*. The management are reducing pay and increasing the hours of duty, an insane step, which is likely to be prejudicial to the would-be monopolists."

Opinions, privately expressed in all quarters, are still stronger. Col. J. J. S. Wilson, late W. U. Superintendent at Chicago, and a pioneer telegrapher, in an interview published in the New York *Times* of Aug. 15, says:

"The Western Union has increased its force during the last few years, but there has been a tendency to give smaller wages and employ an inferior class of operators. The recent economy in Western Union, which, it was said, was to save a million dollars, and make up a large proportion of its dividends, I should judge, could only be effected by not keeping up the properties. Of course, inferior operators render a poorer service. That is inevitable. Besides, the tendency

to reduce salaries has created great dissatisfaction among the men."

A reliable correspondent, writing from Chattanooga, Tenn, says:

"Summer business here is usually light, with a reduction of force, but this year it has been very heavy, with an increase; and if it keeps up this winter, five or six men will have to be added to work the cotton business off promptly. Operators are very scarce in this part of the country, and the cry for first-class work in the South at \$75 per month does not seem to have the desired effect; and, consequently, the business comes in all manner of "bulled up" shape. In 1870 to '75 the salaries in this office were \$110 to \$125, and not enough business doing to keep a duplex working. Now neither the out-let nor the pay is sufficient. The majority of first-class offices have had the extra pay for extra service cut off, working men 16 hours out of 24 for \$75 per month—or, at least, \$90 men doing it with no pay (extra) because they cannot get men at \$75 to fill vacancies caused by those leaving to better themselves in Chicago, Cincinnati, New York and other places, where they have slightly increased, to fill up the force. For my part I think the winter business in the South is going to be a matter of lawsuits with the company during the whole season. Why not pay good salaries and get their old men back—men who know how to handle the business in first-class shape?"

Another responsible correspondent writes from St. Paul, Minn.

"Some of our best men have resigned and accepted positions elsewhere, at better salaries, and their places being filled by a very inferior class of operators, has been the cause of much dissatisfaction among the business men of this city, on account of unnecessary delays and inaccuracy. The local manager, Mr. F. B. Jilson, is in no wise to blame for this. He is deserving of considerable credit for doing as well as he has under the existing difficulties, as is also our worthy chief, Mr. C. B. Davison, for, since the "consolidation," business has greatly increased, and the force has been inadequate.

"It is impossible to obtain competent men at the present salaries, which are from \$40 to \$70. Among a force of 30 men, there are but 4 or 5 that receive over \$60. Ten hours constitute a day's work on the day force, and 8½ with 1 hour at noon, on the night force. Extra is paid for at the rate of 30c. per hour for all that receive below \$50 per month and 35 cents per hour to those above that amount. It will readily be seen that the man who works from 6:30 P. M. until 3 A. M., does not report for "noon relief" next day with a very cheerful demeanor to finish the work of the preceding day. It is true, the night force are paid extra for Sunday service, but as they work 57 hours for six days, against 49 elsewhere for seven days, there is good reason for complaint. While seeking a remedy for the existing dissatisfaction in Kansas City, St. Joe and elsewhere, I hope that General Eckert will not overlook the Northwest."

An Elgin, Ill., correspondent says:

"All old operators in this section are quitting the service and engaging in more remunerative employment, at least where their services will be appreciated."

From all the large cities there are complaints that operators are scarce, and that those employed by the several companies are compelled to do double duty—as an operator remarked the other day to a reporter of the Cincinnati *Enquirer*: "The company seems to be employing every amateur that can make the alphabet." This same operator said: "If the companies would pay living salaries they could get all the good men they need. The railroad lines now are paying fully as well as the Western Union, and as the work is much easier and living cheaper the best men are leaving the cities and going to the country towns, and the city offices are filling up with the poorer class of young and inexperienced operators. A great many first-class operators, too, have been driven into other business by the ruinously low salaries that the telegraph companies are now paying."

Another "old-timer" said to the same newspaper man: "Well, this won't last long. It

seems to me that telegraphic prospects are brightening. The business is growing so fast that capitalists will organize new companies. I think the Western Union has played out all the consolidation string they have, and the next company that comes along will come to stay. Do you know," said the expert, "that a telegram is an unknown thing in two-thirds of the homes in this city, and, in fact, in the country. One-half the business houses in Cincinnati never receive a telegram. They depend entirely upon the mails. Pretty soon they will all use the wires. No; I do not think that the outlook is so awfully discouraging. If the operators will only demand what they ought to have, they will soon be able to get it."

From personal assurances given us at headquarters in this city, we feel sure that the doings of these petty official swashbucklers are without authority, and if we find this to be a correct surmise we shall point them out by name. Meanwhile the fact stands that they have fooled not only themselves but their superior officers, and they had better resign.

### Telephone Transmitter Batteries.

Telephone exchange managers, young and old, experienced and inexperienced, have had an interest in the question: "What battery is, under ordinary circumstances, best adapted for the operation of a battery telephone?"

The two battery telephones in common use, as is well known, are the Blake and Edison transmitters. The question is a serious one to all, and in various forms it has constantly been repeated during the three past years of the exchange business.

This exchange business, this little giant of the Western hemisphere, has, no doubt, been the cause of a tremendous boom in the Leclanché battery.

This battery was the first one to suggest itself as being most eminently suitable for transmitter work. Its comparatively high electromotive force, or vim; its cleanliness; its freedom from corrosive acids and chemicals, and its longevity, all contributed to render its claim to notice a powerful one.

It was at once installed as the transmitter battery par excellence; its virtues were legion, and its faults few and insignificant.

The months flew by and the managers and superintendents of small exchanges found themselves in charge of large ones, for the business, under the influence of popular necessity, had grown like the remarkable beanstalk of the fabled Jack, and the expense began to be a factor.

It was then discovered that the Leclanché had some faults, after all. It was expensive in first cost; it would soon become weak if used more than a few minutes at a time; it would, sometimes, without any apparent cause, get a very weak back and prove itself to be unable to do its work; it would corrode its own wires, and so on, *ad libitum*, to the end of the melancholy chapter.

It was the old, old story; from one extreme the telephone expert had jumped to the other, and the battery that at first had no serious drawbacks, now was nothing but one gigantic fault.

Many persons undertook to experiment on transmitter batteries for themselves, with results more or less successful.

One eminent electrician made a battery by filling a porous cup with a mixture of chloride of lime and crushed carbon round the carbon plate, sealing this mixture up and immersing the whole in a solution of common salt.

He reported that the battery so made worked satisfactorily. But I would not recommend it for general use; it is apt to be disappointing.

Another man, ascertaining from electrical text-books that peroxide of lead was a better



depolarizer for batteries than the peroxide of manganese, and finding out that De La Rive had experimented with it, forthwith jumped to the conclusion that he was the discoverer of this great fact in physics, and constructed, with immense enthusiasm, a battery using the said peroxide of lead, combined with carbon, as the mixture to be placed round the rod of carbon in the porous cup. In course of time comes the chlorine battery inventor, describing his battery with a profundity of chemical symbolism, and displaying a marvelous knowledge of chemical nomenclature. This invention was backed by Prof. Carhart and ought to have succeeded, but it cannot be denied that it has so far fallen flat, after a short but vivid coruscation.

Soon came another battery, aspiring to the favor of telephonists. Surely in this the force of simplicity can no further go; for this cell has no porous cup, has no depolarizer, but consists simply of two opposing plates immersed together in a solution of sal ammoniac.

This is now well known by the name of the "Law Battery," because introduced and manufactured by the Law Telegraph Company, of New York.

It possesses several well-defined advantages, chief among which, as previously indicated, is its simplicity of construction. Its extreme cheapness is also noteworthy, since it only costs \$1.25 per cell complete, subject to discounts in quantities, and somewhere about 10 cents per cell per annum for maintenance.

The cover is tightly attached, so that evaporation, or creeping of the saline solutions cannot ensue, and yet the cover can be easily put on and off at pleasure, as the sealing is effected by a rubber ring placed around the neck of the jar, over which the cover fits tightly.

It is said that the connections have never been known to corrode, and as they are exposed to view, it has been an easy matter to determine the question.

As yet no fault, it is stated, has been found with the battery, and, judging by the large number of cells which, reports say, have been sold during the brief time it has been before the telephone public, it is growing in popular favor. Nearly all of the exchanges in the country are trying it experimentally, and many, it is said, have adopted it exclusively.

Some enterprising persons and electricians, acting upon the suggestion of J. T. Sprague, the English electrician, have endeavored to prove the Leclanché patent invalid, but there is no sufficient ground for such an assumption.

The Leclanché battery, claiming the use of peroxide of manganese when moistened by a liquid containing a salt in solution which has no chemical action upon the manganese, the manganese to be in a porous cell, was patented April 23, 1867, and has, therefore, three years still to run. It was re-issued with much broader claims on February 17th, 1874, and the patent for the Leclanché prism battery was granted July 13, 1875. This has still eleven years to run.

After the revolution already recorded against the Leclanché battery took place, the inevitable reaction set in, and it is once more regarded as a very fine battery—and by many, indeed, the best, all things being equal—for a battery transmitter.

On the score of economy, I am disposed to regard the prism form as the most desirable, as dispensing with a porous cup.

I will here give, for the benefit of the uninitiated, a short description of both:

The Leclanché cell, ordinary form, is simply a plate of carbon set in a cup of porous earthen ware, and surrounded with a mixture of peroxide of manganese and granulated carbon. When full, this is sealed up by a resinous cement. The carbon plate sticks up through the cement, and is fitted with a cap of lead, surmounted by a binding screw, for connection to the circuit wire. Two holes are made through the cement.

The porous cup, with its contents, is then placed in a glass jar, which is filled to the shoulder with a saturated solution of sal ammoniac; while in one corner of the glass jar stands a rod or pencil of zinc, fitted with a spiral connecting wire, which forms the negative pole. This, then, is the ordinary form of the Leclanché battery. The object of the peroxide in the porous cup is to prevent polarization by absorbing the hydrogen produced by the galvanic action; the object of the pulverized carbon is to increase the surface

of the carbon plate, and likewise to assist the manganese in its work, by presenting a number of salient points to work on. A cap of lead is placed on the carbon in order to form a good point of connection with the conducting wires, and the holes through the sealing mixture are provided for the escape of any gases that may generate in the porous cup.

To set up the battery, take about four ounces of sal ammoniac, put it in the glass jar, and fill the jar one-third full with water. Stir it up, pour about a tablespoonful of the water and sal ammoniac into the holes of the porous cup, then put the porous cup into the glass jar and fill it to the shoulder, never higher, as the dryer the contents of the porous cup are, the better they will work. Put in the zinc, which should always be of rolled metal, and the cell is set up.

The Prism cell is somewhat different in construction, although the principle is identical. In it, instead of surrounding the carbon plate with a mixture of granulated carbon and peroxide of manganese in a porous cup, the depolarizer is formed of a mass composed of equal proportions of peroxide of manganese and granulated carbon, the whole held together by the introduction of from five to ten per cent. of some cementing substance, such as resin; the carbon plate is inclosed in this mass, and the entire substance is subjected to hydraulic pressure in a hot mold. The zinc in this battery may be of any desired form.

The zinc forms one pole and the mixture the other. Both are fitted with screw connections, and immersed in a solution of sal ammoniac in the glass jar. This style is to be preferred, and is not so expensive as the other. In the use of the Leclanché battery in any form, care must be taken that the vapor of ammonia does not eat away the conducting wires.

An occasional lookout should be kept for the formation of white lead between the carbon and its lead cap. If the battery fails to get up strength, ram a small screw-driver through the holes in the sealing mixture and see that they are clear. It frequently happens that they become stopped up and the gas cannot escape.

If the battery be used in connection with a magneto bell, care must be taken that the wires are so connected that the circuit is completely opened when the telephone is hung up. It is also well to look out that the wires from the battery do not cross any damp place, otherwise a cross connection may occur, the effect on the transmitter being diminished, causing a bitter war from the suffering patron of the telephone.

If the battery be in a warm place, the solution soon evaporates; therefore, don't put it in a warm place if you can help it; but if you can't help it, do your best to make it air-tight and inspect frequently. In places where the transmitter is to be continuously employed use a blue vitriol battery.

To sum up, the two best batteries for telephone transmitter purposes at present before the public seem to be the Leclanché and the Law. As between these two opinions differ. For burglar alarm purposes, electric bells and the like, the Leclanché is undoubtedly preferable, and as a telephone battery not inferior to the Law. The Law battery, however, is the result of long and patient experiments on the part of the Law Telegraph Company to arrive at the best, simplest and most economical battery by telephone use, and ought to be accorded a fair trial for telephone exchanges. Those who use either the Law or the Leclanché will not be far astray. It would do no harm, however, for exchanges who have heretofore used neither or only one, to give both a fair and equal test. By this means they will be better enabled to arrive at a proper conclusion as to which of the batteries best suits the particular requirements of their exchange. T. D. L.

#### Progress of Opposition Companies.

Mr. J. D. Flynn, prominently identified with the Baltimore & Ohio Telegraph, recently said, in answer to the inquiry whether it was a fact that the Baltimore & Ohio was soon to establish its own telegraph system, "Yes, and we expect to be ready for business within 60 days, or as soon as we can make the necessary arrangements. We have already over 1,200 miles of wire in operation, and could establish a very respectable

business as it is. These lines extend to Chicago, and were being extended through to St. Louis when we were interrupted by legal obstructions at Vincennes. We are now pushing on beyond there, and have material distributed along between 20 and 30 miles on the railroad beyond that point. We shall run other lines to Chicago by way of Peoria as soon as we get the St. Louis connection effected. Our most important business yet in establishing our lines is to reach New York City, and this is well in train. That done we can open up whenever we please. Cleveland and Toledo will naturally be touched later, being too important business points to be left out. When the machinery is fully in operation we shall push out in different directions and form a complete system. It is not a bubble blown up to sell out. You may be sure of that."

With regard to the other companies, the Mutual Union seems at present to be the only dangerous rival. That company is making tremendous efforts to open up some time in October, so as to catch a share of the fall trade. A circular issued by them says that their old line, between Boston, Mass., and Washington, D. C., has been fully equipped, passing through the cities of Providence, Hartford, New York, Philadelphia and Baltimore, with connections from the main line to Newport and Springfield, Mass., Newark, N. J., and Wilmington, Del., a small link of the Newark line being not quite finished. The extension of the company's lines which was contemplated four months ago, and for the building of which bonds were subscribed, is under construction, and the rapidity with which the work is being prosecuted bids fair to promise that the entire line between New York and Chicago, by way of Albany, Buffalo, Cleveland, Toledo and Detroit, will be open for business by the early part of October; another line will connect Boston with Albany by way of Springfield. A contract has been made with the Chicago and Milwaukee Telegraph Company for the use of their poles between Chicago and Milwaukee, and it is expected that the new lines which are being built between Milwaukee and St. Paul, and Chicago and St. Louis, by the Mutual Union Telegraph Company, will be finished simultaneously with the line from New York to Chicago. A southerly line has also been surveyed between Washington and Chicago, by way of Cumberland, Wheeling and Pittsburg, including Cincinnati, Zanesville, Columbus, Indianapolis, Terra Haute and Vandalia, and is being rapidly pushed toward completion, so that it is confidently expected that the company will have two independent routes to the West ready for service within the next ninety days. A contract has also been made to extend the company's lines from St. Louis to Kansas City, and it is thought that they will be built before the approach of winter. A connection has also been made from Boston to Bangor by way of Portland, and that line is to be completed by Nov. 1.

As a matter of interest, to show how rapid the construction of the company has been carried out, they call attention to the fact that up to date there have been built 2,000 miles of pole line, one-half of which was erected during the months of June and July; and Mr. Walter Katté, the engineer of the company, reports that construction is progressing at an average of over 500 miles a month, and adds that "upon the poles already erected there have been strung more than 10,000 miles of wire."

The Postal Telegraph Company seems to do little but beat gongs, and we are not sure that its ultimate objects are genuine. The name of its speculating president, James R. Keene, does not seem to inspire much confidence in financial circles, although the same might have been said of Jay Gould in connection with the late American Union. But, taken all in all, the impression seems to prevail that there is a colored gentleman concealed somewhere in this Postal Telegraph wood-pile.

It has recently been rumored that a combination of interests has been entered into between the Mutual Union, the American Rapid, the Canadian Mutual, and the Baltimore and Ohio Railroad systems of telegraph lines. It has also



been stated that the Mutual Union was seeking to form a union with the Postal Telegraph Company, James R. Keene's organization. It is understood that bankers interested in the Mutual Union Company have suggested to the Postal Telegraph Company the idea of a combination which would make only one great opposition system to the Western Union. No formal negotiations, however, can be said to have been entered upon, and some members of the Mutual Union Company reject the idea of association with the Postal Telegraph Company until it has brought forth works meet for consideration. As to the other negotiations referred to, it is stated authoritatively that nothing has yet been settled, and that no details of the negotiations can be given at the present moment.

An officer of the Mutual Union said: "So far as we are concerned, the Postal Telegraph Company is a myth. It is easy enough to organize a company on paper; it costs \$15 and the rent of an office. We know that the Mutual Union, the Rapid, and the Baltimore & Ohio Company have lines and property, which the other company has not. You might as well talk of consolidating an elephant with a butterfly as to talk of the Mutual Union being absorbed by the Postal Telegraph. Moreover, the Mutual Union will never be consolidated with any company—will never be absorbed—never. You can state that fact in as emphatic terms as you please.

"We have been negotiating with the Rapid Telegraph and the Baltimore and Ohio Companies for a combination of interests. But the negotiations are not yet completed, and if much publicity were given to them it might work us an injury. The probabilities are that they will end in what will be an absorption of the Rapid and the Baltimore and Ohio systems by the Mutual Union. I know that Mr. John W. Garrett is opposed to surrendering the control of any of his property, but we have got the promise of an alliance with the Baltimore and Ohio system, on terms to be arranged subsequently."

Regarding the progress of the Mutual Union's lines, it was stated that the company is preparing for the construction of 500 miles of line in Maine. The Canadian Mutual Telegraph Company is being organized in Canada for the purpose of extending the lines of the Mutual Union throughout the Dominion. The lines from the East to Chicago, St. Paul, St. Louis and Kansas City are nearly completed. The company has about sixty gangs of men at work on the lines, and is said to be building at the rate of 1,000 miles a month. A separate southern line from Washington to Chicago is nearly two-thirds finished. It will tap Frederick, Maryland, Cumberland, Pittsburgh, Cincinnati, Indianapolis and Springfield, Ill.

"We do not propose," continued the gentleman above referred to, "to open our lines to only a few places at a time so that the Western Union will be able to beat us in detail by reducing a small proportion of its rates. We shall take our time, and when the opposition system is opened it will be over a very considerable portion of the United States. Then, if the Western Union wishes to fight us, it will have to reduce its rates so as to affect a very wide area. As for us, we do not wish to slaughter rates. The Mutual Union is a business enterprise, and it will seek to obtain profitable returns."

Referring to the above, a gentleman connected with the Postal Telegraph Company, in answer to inquiries, said:

"All I can say is that we are going to furnish the people of the United States with cheap telegraphy, and it will only need the building of our experimental line from New York to Chicago to demonstrate our ability to do so. We are about to close contracts for the building of that line, and I will warrant that it will be completed in a shorter time than any other line of its distance was built in. With that line finished, and the merits of our system proved, it will simply mean that our company, in a year from next January, will have its wires all over the country. The Chicago line will be finished by next January. We intend to make our rate to Chicago 25 cents for 20 words, against 50 cents for 10 words by the Western Union, and we can make a profit at that rate. We never offered to consolidate with the Mutual Union Company. We have refused offers of union from bondholders interested in that com-

pany. In fact, the lines of the Mutual Union would be of no value to us, for we could not furnish cheap telegraphy to the public over them.

"The Postal Telegraph Company proposes to construct immediately its trunk line of telegraph from New York to Chicago, composed of two compound steel and copper wires, with a resistance of only two ohms and three ohms to the mile, respectively, and equip them with the Leggo Automatic and Gray Harmonic systems. One thousand words per minute can be sent on each wire in opposite directions simultaneously."

#### A Clearing-House System for Telephone Exchanges.

A satisfactory telephone service is almost wholly dependent upon the central office. The more perfect the system for manipulating the calls of subscribers at that point, so in proportion is the service more satisfactory. The public already recognize the telephone as not only a great convenience but as an absolute necessity. They are willing to pay what many of them consider an exorbitant rental for its use, but at the same time they demand in return, not only good service but, as far as possible, a perfect one.

It is generally acknowledged that the service in cities where large exchanges are operated is deficient, inasmuch as a subscriber is forced to wait (usually with ear at telephone) for a connection with the person desired until patience ceases to be a virtue, and opinions of the telephone and of the management and operators, not at all complimentary to either, are indulged in. All this is no fault of the telephone (thanks to Professor Bell), neither that of the system of wires, although often anything but first-class, but more particularly to the system prevailing at the central office for answering calls and the proper distribution and attention after being received.

Improvements in Central office apparatus, more particularly switch-boards, have been made and adopted whereby the time necessary for answering calls has been greatly reduced. Connections between subscribers upon any one board or section under control of a single attendant can be made in acceptable time, but in the case of subscribers whose lines are located upon different boards the reverse is equally true. The greater proportion of calls being of the latter class, it is necessary to render the systems more perfect in such detail as pertains to this class of communication, which is termed "trunk" or "cross connections."

The methods of communication between the attendants of different boards or tables at present in vogue are: First, by word of mouth; second, by slips of paper, and third, by a telephone circuit.

The first named is objectionable, as it creates a continual hub-bub and confusion, also great liability to error. The second, that of using a slip of paper bearing in pencil mark the number or name of the subscriber calling and the one desired, also the number of the strip upon which the connection will be made, is an improvement upon the first, but is not perfection, as actual use attests. The slip, after being properly filled out by the attendant, is placed upon a "file," there to await the arrival of an office boy for transportation to the table or board connecting with the subscriber desired. Any one who has served a few years in a large telegraph office is well aware that office boys, as a rule, are not gifted with "high velocity." Their work, to them, has the stamp of monotony, and they get imbued with the idea that when one message is removed from a "file" another, Phoenix-like, will replace it when their backs are turned. Relying, then, upon this method, it is natural to infer that more or less delay will arise at this point.

The third, which is communication between the attendants of the several tables of an exchange

by telephone, is comparatively of recent date and not thoroughly tested as yet, but would seem to entail unnecessary extra labor upon the attendant.

A new and novel method of communication between the tables or boards of an exchange has recently been devised and patented by Mr. W. H. Sawyer, of Providence, R. I. It is called the Clearing-House system and may be briefly described as follows:

A space sufficient for an ordinary sized desk is selected near the centre of a group of boards or tables. Communication between the tables and the Clearing-House is obtained by means of tubes (preferably of paper to lessen the noise) about 1½ inches in diameter and slightly inclined.

The inclination, which is ½ of an inch to the foot, more or less, is amply sufficient to insure the rapid passage of a ball through the tube.

The balls, which are about one inch in diameter, of suitable material, such as ivory, or even wood coated with a silicate preparation, have three flat surfaces near together, made by grinding or cutting. The letter designating the table to which they belong is also painted upon the ball near the flat surfaces. The method of procedure is as follows:

Subscriber No. 15, located on table A, desires to communicate with subscriber 375, located on table H. The attendant at table A, upon receiving this information from subscriber 15, takes from a tray or box at the left one of the balls, and with a pencil places upon the surfaces (15)-(375), the figure 2 denoting that the connection will be made upon strip No. 2.

This ball is then dropped in a hole in the surface of table A at a convenient point, from whence it rolls by gravity to the Clearing House; time consumed, from 2 to 4 seconds, depending upon the distance. The clerk at the Clearing House at once picks up the ball and examines it. He understands it is intended for table H, as all subscribers between 350 and 400 are connected with table H. In 2 or 3 seconds it reaches table H. The attendant at table H picks it out from a tray or shallow box and comprehends at a glance that subscriber 375 is wanted on strip No. 2. Subscriber 375 is thereupon called up and informed that subscriber 15 desires to communicate. The ball is then marked with an X, or any pre-arranged sign or character, and dropped in a hole in the surface of table H, which communicates with the Clearing House.

The clerk at the Clearing House noticing the X, or that the ball is marked denoting that the connection has been made, places it in a tray in front of him which is also in front of a check clerk, who picks out the ball and makes the desired entry on a check sheet or book, to the effect that subscriber 15 has conversed with subscriber 375.

The pencil marks are then erased with slight moisture by the check clerk and the ball returned to table A by simply dropping it in the tube leading to that table.

In case subscriber 375 did not respond to the calls, a different prearranged mark would be placed upon the ball by the attendant at table H and the ball returned to table A, the connections on the strip 2 straightened, and subscriber 15 notified of inability to raise 375. In case of line trouble, the ball could be marked in some other prearranged manner, and by means of a tube from the Clearing House to the Inspector's Department, proper notification of such trouble could be thus promptly transmitted.

It will be seen by the foregoing description that the proper delivery of the calls by this system is controlled by gravitation, as against boy-power and will in the ticket system.

A ball must reach its destination in from 10 to 12 seconds, and not only is this true in one instance, but invariably so. A ball once dropped in the hole cannot go astray, drop on the floor or be blown away.

No office boys are necessary. The salary of an office boy is not large, but half a dozen in an exchange are a decided expense.

With a properly arranged exchange in other respects, not a word need be spoken, and above all every call has a certain successive order which of itself would be a satisfaction to subscribers to whom the fact was communicated.

The check sheet kept by the clerk at the Clearing House affords complete information regard-



ing the absolute number of connections made for every subscriber.

This is a valuable feature.

One fact greatly in favor of its adoption is the small expense attending its introduction; the paper tubes and balls costing but a small sum.

Mr. H. B. Lytle, General Manager of the Telephone Despatch Co., Boston, is now testing Mr. Sawyer's system with a view of adoption.

#### Free Advertising for Telegraph "Colleges."

The following appeared recently in the Cincinnati *Enquirer*:

"A dispatch from Wall street on Thursday said: 'The Western Union Company say they have more business than they can handle, and are short fifty operators at their main office here.' A prominent telegrapher in Washington says: 'I guess it is so, and that the Western Union were about as bad off in the West as in the East, as a great deal of Cincinnati business lately was being delayed at Washington.' Another telegrapher attributes the 'unfinished business' to a lack of operators, and looks for an advance of salaries."

On the following day there appeared in the *Enquirer* an advertisement as follows, with, of course, the name of the "college":

**A.—YOUNG MEN—**To learn telegraphy; operators wanted all over the country; see yesterday's (Saturday) *Enquirer*, fourth page, sixth column.

As well as being cruelly misleading to our rising youth, this coincidence proves that the Cincinnati *Enquirer* gives twelve lines of free puffs for five lines of paid "ads."

The interest the paper seems to have taken lately in parading before the public the scarcity of operators, increased wages paid, etc., would lead us to believe that there is a close connection between the *Enquirer* office and the "college."

The Trenton, N. J., *Daily Emporium* gives us the following:

"Wanted—Young men and ladies to learn telegraphing. Instructions given at residences when desired. For terms, etc., apply to J. K. Sutphen, 35 Copper street, for one week."

The *Emporium* sustains its grandiloquent title by giving only a little puff for a little advertisement—five lines of each.

Our next telegraph "college" advertisement is taken from a paper supposed to be interested in the welfare of railroad men. It states that, "knowing the demand for young men's services as telegraph operators, the advertisers—though they don't give their names, but only that of the school—have opened a school for the thorough instruction of telegraphy, and a complete knowledge of all its branches connected with commercial and railroad business."

This is supplemented by both editorial and general notices, one of them three-quarters of a column long.

It is gravely stated that "good telegraph operators are, at the present time, in great demand all over the country, and with the rapid increase in railroading, it is probable that the demand will not be supplied for many years to come;" and that there is "not a railroad in the United States to-day that does not most seriously suffer from the lack of competent operators;" that "we have the promise that any young man or boy of average intelligence and good habits, who enters the school and avails himself of the course of instruction, may at the end of the term feel reasonably certain of a good appointment," and that "there are but few boys or young men, ambitious to succeed in life, who may not easily command a sufficient sum of money to complete a thorough education in telegraphy, especially where it is reasonably certain that they will at once, upon the completion of their education, step into positions, the salaries of which will quickly enable them to return the money where it was obtained."

All this, as well as proving how politely the spider may invite the fly into his parlor, proves also that the enterprising journal from which we copy the advertisement can outbid the *Enquirer*,

by giving a seventy-two-line puff to obtain a nine-line "ad."

As a matter of fact, nothing could be more misleading than the statements quoted, a fact which is illustrated with grim satire on another page of the same issue containing the advertisement where, under the title "Railroading in Colorado," its own correspondent says: "Operators are thicker than politicians at a ward caucus. Wages are no better than East. Brakemen get only \$60.00 a month and telegraph operators all the way from a free lunch to \$50.00 a month."

From this showing alone those whom the paper advises to learn telegraphing may make \$10 a month more by learning to twist a brake scientifically.

The story that "operators" are scarce is literally true—the craftiness is shown in concealing the fact that such "operators" as are turned out from these schools are, as the correspondent above quoted says, "thicker than politicians at a ward caucus," and working, according to the same classical authority, for a salary estimated at "all the way from a free lunch to \$50 per month." The science of telegraphing is now about as near perfection as it ever can be, and while operators of a low grade, such as bear "college diplomas," are to be found starving, the superior class of manipulators, owing to the short-sighted policy of the companies in reducing salaries and the like, are extremely scarce, and will be until the "economical" mania wears off and fair salaries are again paid for first-class work. To attain this standard requires from two to five years' steady practice in a large commercial office. The ranks are being continually recruited from the better class of office boys and messengers, who literally absorb the mysteries of the craft in their tender years, grow up with the business, and attain a degree of proficiency which no college student can ever expect. Another peculiarity of telegraphing is that not one man or woman in a hundred who commences to learn it after the age of twenty-one years can ever hope to be worth \$50 per month to any telegraph company. At that age they might as well attempt to learn the piano-forte and become star players.

In the matter of salary, telegraphers are proverbially badly paid. Considering the exhausting labor, the long hours, and the patience, skill and intelligence which are indispensable for the proper administration of even a small telegraph office, there is scarcely a business in the world which is so poorly remunerated. Even in places where there is a large telegraph patronage, the salaries are surprisingly low. The railroad operators are even more poorly paid. For the double duty of acting as train dispatcher and operator, and putting in twelve or fifteen consecutive hours' work daily, only \$30 per month is paid by one of the largest Eastern railroads.

Now, if these wily advertisers would only be truthful we should not complain, but when they speak glowingly of "superior situations," "\$100 a month," "\$50 a month," and other absurd statements, we protest, as much in the interest of their prospective young and inexperienced victims as in the interest of our sadly abused profession.

The following resolutions, signed by a number of operators, gives a glowing account of the school above referred to, and is well worth reading:

*Whereas*, This school, presumably, seeks to create false impressions among young men, boys and others, as to telegraphy and its real condition, for the purpose of securing a pecuniary profit to the proprietors who actually offer the supposed prominence of their positions as full or partial guarantee of employment, whenever the student becomes more or less familiar with the art, and

*Whereas*, We possess official statements from various railroads centering in this city, showing that where one vacancy occurs, ten or fifteen applications for positions in the telegraph service are received; and

*Whereas*, Telegraphy is overrun with cheap telegraphers, just expert enough that salary is no object to them, making the business less profitable than any other pursuit requiring equal qualifications; and

*Whereas*, Throughout the United States and Canada, all the large cities contain one or more schools, colleges and places of this kind, where

telegraphy is "taught," and every month countless numbers of their victims are sent adrift; but where one succeeds in getting a situation, however simple, he is compelled to learn over again or become a common nuisance on the wires, interrupting and delaying business, regardless of its import; therefore,

*Be it Resolved*, That we, the undersigned telegraphers, actuated by a proper feeling of concern for the future welfare and standing of the occupation we follow, as a means of livelihood and the support of those dependent upon our exertions, with a considerate sense of justice toward the public, offer this testimony, confirmed by the number of years' practice and observation shown opposite our respective names, that we fully recognize and respect the right of persons to engage in any legitimate business, for profit or other advantages to be derived therefrom; but that bartering in positions, and deceiving, intentionally or otherwise, so that it results in personal gain, is not right or legitimate; and, further,

*Be it Resolved*, That we call on the fraternity at large and friends everywhere, to use all honorable means in their power to abolish this reckless teaching of telegraphy; and refuse all patronage, and as far as practicable, endeavor to curtail the circulation of any paper, pamphlet or circular offering free encouragement to such illegitimate practices. And further,

*Be it Resolved*, That our object is not to injure or intimidate, but to arouse the fraternity and the public to an appreciation of the magnitude and dangers of this constantly-increasing evil; that people trusting business, property and life in the hands of irresponsible boys, who have spent two, three, or four months in a "telegraph school" shall know that the proprietors of said "schools" are responsible for the present unsatisfactory condition of telegraphy, and the loss of life and property resulting from the inexperience of their students.

Years.	Years.
J. A. Hamley.....16	F. C. Robertson..... 8
Jas. M. Wright.....13	D. F. Desmond..... 7
J. M. Cronenberg...13	E. M. Williams..... 7
J. H. Holsey.....12	F. J. Krumling..... 6
A. W. Pearce.....11	P. J. Raidy..... 5
M. W. Russell.....10	H. H. Cramer..... 5
A. D. Campbell.....10	C. O. Stowe..... 2
G. E. Rauck..... 9	

#### Consolidation in Canada.

On the 19th ult. it was announced here that the amalgamation of the Canadian telegraph companies, under a guarantee of 8 per cent. to the Montreal and 6 per cent. to the Dominion companies, by the Western Union, had been completed by the President of the latter signing the agreement transferring all interests to the Great Northwestern Company, whose head office is now in Toronto. This consolidates all the telegraph interests in Canada. When this project was first proposed it was met by the keenest opposition, and because the Western Union Company, which controlled the Dominion line, was a party to the arrangement, a patriotic outcry was raised against American interference in Canadian institutions. Boards of Trade in various cities were summoned to protest; the Government was called upon to intervene, and, finally, the courts were appealed to and granted an injunction. The real cause of the outcry was, it is alleged, the prospect of an ending to the low rates which permitted the uniform transmission of ten-word messages, irrespective of distance, for 20 cents; night rates from Montreal to Chicago, 1,500 miles, for 25 cents, and press reports, 500 miles, for 10 cents per 100 words. By limiting the increased tolls to 25 cents for 10 words, the press rates to 25 cents for 100 words, guaranteeing the stockholders a fixed dividend of 8 per cent., and satisfying the Government that the new arrangements would be under Canadian management, public apprehension was quieted and the legal difficulties surmounted. The consequence will be that the Western Union Company will have its revenues increased at least \$100,000 per annum and virtually control the entire telegraph system of British North America. It is a condition of the agreement that the charge for ten-word messages in Canada shall not exceed twenty-five cents, except in case a specific par-



liamentary or local tax should be levied, when the rate would be liable to increase in proportion to the amount of taxation.

This must undoubtedly prove a valuable addition to the Western Union system. The last annual report of the Montreal Company shows that in proportion to the population in extent of territory, no country possesses telegraphic facilities equal to those of the Dominion. There are nearly 25,000 miles of wire included in the combined companies, 17,000 poles, with 2,500 offices. The combined capital invested is over \$3,000,000 and the total receipts last year were \$750,000. The company under which the consolidation has taken place is the Northwestern of Canada, of which Mr. Erastus Wilman, of New York, is President. The company owns lines extending through the Northwest territory and is now in treaty with the Canadian government for assuming lines hitherto controlled and operated by the government, but without profit. The extent of the system may be measured by the fact that the wires of the company cover an area almost as large as the United States.

#### Underground Telegraph Lines.

In the annual report of the Engineers' Department of the District of Columbia, recently issued, considerable attention is given to the above subject. The following is a synopsis, which will be of interest to OPERATOR readers:

There are now in the city of Washington 41 miles of telegraph lines, consisting of 1,266 poles, carrying about 336 miles of wire, in addition to telephone and fire alarm wires carried over the tops of the houses, and estimated to amount to 100 miles of wire.

The use of underground telegraph lines is no untried experiment. No telegraph pole is to be seen in London, Paris and other great cities, and there are to-day more than a thousand miles of underground line and 30,000 miles of underground wire in successful operation in Europe. No doubt, therefore, exists as to the perfect feasibility of the system. It is true that the expense is greater than in the system of carrying the wires on poles, but it is a question whether the streets shall be any longer disfigured on account of this expense.

The cost of changing the existing wires from the poles to underground pipes, it is estimated, could probably be brought within \$8,000 a mile for a line of 40 conductors, with a reduction of \$185 for each conductor less than 40. In Paris the cost of pipes and labor has amounted to \$2,350 per mile, and for wires laid in cables of seven conductors each \$103 per mile for each conductor. When laid in the sewers, as 80 miles of underground line are laid in Paris, the wires are placed in seven conductor cables, and inclosed in lead tubes which are attached to the sewers by iron staples, the cost of the cables and the lead sheathing is \$130 per mile for each conductor, and of attachments \$90 per mile for each cable. For the ten miles of the trunk necessary for the present telegraph business of this city the total cost would, therefore, be \$80,000. This expense is to be divided among several companies, and it might be partially reduced by remitting for a term of years the taxes due on the property of the companies. It is, however, a question whether the streets and trees shall be sacrificed to the telegraph lines, and no question of cost ought to allow that question to be decided against the streets. We have 120 miles of shade trees, containing over 50,000 trees of twenty-two different varieties. Ten, or even five, years hence the beauty of these long lines of trees will be world famous, for no other city in the world has anything to compare with them on its streets. To allow the beauty of the streets to be destroyed by unsightly poles and wires, or to allow the trees to be injured for the benefit of the telegraph business, ought certainly not to be permitted. The work of removing the poles should, therefore, be undertaken at once.

#### The Electric Light—Maxim vs. Edison.

The Commissioner of Patents, to whom Mr. Edison appealed, has finally affirmed the decision given by the Examiner of Interferences and Examiners-in-Chief, in favor of Mr. Maxim, one of the electricians of the United States

Lighting Company, in the case against Mr. Edison, involving the celebrated platinum lamp.

This invention, involving a combination of a thermo-static regulator with a platinum lamp, is the one which was heralded in April, 1879, as the invention of Mr. Edison, which was to effect a complete revolution in illumination. The result of it was for a time very disastrous. The gas stocks were greatly depreciated in value, not only in this country but in Europe. In this country the value of gas stocks was estimated at that time at \$400,000,000. The decline in those stocks in both countries may safely be estimated at not less than \$50,000,000. On the other hand, the stock of the Edison Company shot up from \$100 a share to \$4,000. Maxim and Edison both claimed priority of invention. The claims of the rival inventors were thereupon submitted to the Examiner of Interferences, and after a thorough investigation he decided, Feb. 6, 1881, in favor of Mr. Maxim. Mr. Edison appealed to the Examiners-in-Chief, and they also declared in favor of Mr. Maxim. Finally Mr. Edison appealed to the Commissioner of Patents, and he affirmed the decision of his subordinates. This decision ends the final appeal in the Patent Office, and the practical result will be that a patent will issue to Mr. Maxim. A United States Court can now be invoked to cancel the Edison patent.

The Edison people say they do not use the invention now, and that it is a dead issue anyhow; while officers of the triumphant company say that they really enjoy the glory of defeating Mr. Edison, even upon a dead issue.

The philosopher of the *Detroit Free Press*, in referring to this subject, very aptly says: "Obviously the regulator was intended to regulate the currents of electricity so as to preserve a uniform intensity of light. Maxim invented it for this purpose; but Edison's improvement on it left the original inventor altogether in the shade. The Edison Company employed it to regulate the price of Edison's stock on the one hand, and gas stocks on the other. By this remarkable and useful little instrument the price of Edison's stock was advanced to \$4,000 a share, and gas stocks depressed to the extent of over \$60,000,000. These figures show how weak and impotent an invention may be even in the hands of its inventor; but when a man of genius gets hold of it, he makes it tell at once—on the stock board, at any rate."

#### Telegraph Colleges, So Called.

A correspondent of the *New York Star*, signing himself "Victim No. 2," in a communication recently published in that paper, says: "The institutions known as 'Telegraph Colleges' are nothing more than concerns for robbing poor people of their few dollars, by the men who have the school under their charge. I have attended one of these 'Telegraph Schools' for the past six months, and after all this time I am refused a position as an operator, or even assistant operator, not because I was unfortunate enough to be a graduate of a 'Telegraph School,' but because I was unable to take a position which was offered me. This is all due to the manager of the school, as he promised me faithfully, when I entered his institute and paid my money, that he would finish me at the end of that time, and assured me that I would be capable of taking a position; but I have only suffered and spent my precious time and money, as many hundred other young men and women of this city have, and have not received anything in return. I am sure that I did my part in turning my mind to the study and practice of telegraphy, but I am positive that the man to whom I paid my \$40 (which was the amount charged for one quarter) did not perform his part. \* \* \* Before paying my money I received a circular giving a full list of former pupils and their names signed to letters recommending the school, but I have hunted most of these up and could not find one among the many whose names appeared in the circular that would speak a good word concerning these schools. Just the reverse. I found they were all against them, and stated they were the worst kind of frauds, which is perfectly true. The managers have published their names without authority. You cannot find among the many hundred operators in this city one who will say they attended any of the telegraph schools. There might be several, I dare say, who have previously attended, but are not willing to own

up to it on account of the bad name the schools have received from the directors of the Western Union and other telegraph companies."

#### Transmitting Speech by the Telegraph Key and Sounder.

I see in your last *Scientific American*, in an article by George M. Hopkins, engravings of a method of transmitting articulate speech by an ordinary key and sounder, but it gives no information as to how it is done except by saying it is only a matter of adjustment. Will you please tell me through the columns of your paper how this is done?

H. F. DODGE.

CLINTON, Mo., Aug. 3, 1881.

[The sounder is mounted on a thin board, and the sounder lever is rigidly secured by the adjusting screws so that the armature is very near the poles of the magnet.

The key is placed on a thin board or on a resonant box, and the screw which passes the key lever and bears upon the spring is loosened until the platinum points are in light contact. By placing the ear in contact with the board upon which the sounder is mounted, and listening while adjusting the key, the proper contact may be readily secured.

Another method of adjusting the key is to turn the back adjusting screw until the contact points of the key touch, allowing the upward pressure of the spring on the key to remain normal. The required delicacy of contact may then be secured by screwing down on the spring so as to increase its upward pressure on the key. The key is mounted as in the other case.

This experiment requires a current whose strength is eight or ten volts.

By listening to the sounder whatever is said in the vicinity of the key may be heard.—*Scientific American*.

#### Indianapolis (Ind.) Notes.

To the Editor of The Operator:

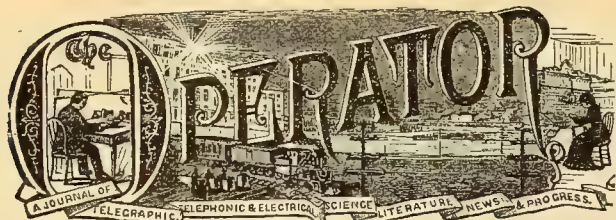
SIR: Since our last correspondence from here several things of interest to the craft at large have occurred, including the organization of as healthy a union as has been yet reported from any of the other cities. The boys in this city, and, in fact, throughout this "whole neck of woods," hailed with much enthusiasm the attempt of our men to band themselves together in one common union, and be as brother should be to brother, acting in union with a view of bettering their condition. At our meeting, Aug. 7, held in parlor A of the Bates House, the following officers were chosen for the year: Mr. S. L. Douglass, W. U. office, Chief Operator; Mr. E. D. Carlyle, W. U. office, Assistant Chief Operator; Mr. Frank Farrell, Pan Handle, Secretary; Mr. F. M. Ketcham, W. U., office, Treasurer, and an Executive Committee, composed of Messrs. Kinney, MacIntire and Nixon. The Constitution of the Brotherhood of Locomotive Engineers was adopted upon the recommendation of the committee appointed at the preliminary meeting, the Sunday before, with one amendment, prohibiting members teaching our profession. We expect seventy-five members after our next meeting, and the boys along the lines of the many railroads centering here are inquiring as to our condition, and all favor the union. No doubt we will get two-thirds of the railroad operators in Central Indiana in a short time.

The following changes have taken place since our last: Mr. E. L. McClure, of the Bee Line, has resigned and gone to his home in Wabash, Ind.; Mr. Butterfield, of the Western Union, has resigned to "go to Chicago." Con Sullivan has returned from Chicago after a two week's stay. Con says he got sick; so did Geo. Samuels and Ed Ball, who went with him, and all have returned with the verdict that Chicago is "no good." We are expecting Al Vanlandingham every moment. Mr. Jno. Crowe has also returned from Louisville, where he went last summer. John stepped in the office unexpectedly last week, humming "Home, Sweet Home," and business stopped till everybody shook hands; John is an old soldier in this office.

We are happy to hear talk of increased wages among the railroad boys here. We claim some of the finest railroad operators in the country, and they think their salaries will soon compare with commercial men.

DUG.





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### THE IMPENDING SHADOW.

The electric telegraph has now become so widespread and indispensable to the public at large, that nothing should be overlooked by its managers which will tend to make it more effective and reliable, or to forestall by remedial measures any possible stoppage among the wheels of its machinery, either through the stupid mistakes of local managers or the downright folly of mistaken operators. When widespread discontent is plainly shown to prevail among the men—and such complaints as have seemed to us well founded have already, to a certain extent, been reflected in these columns—it is time for superior officers who have the interest of their company at heart to wake up and investigate the matter, and, if the grievances alleged prove to be well founded, to rectify them.

When the skin-flint Vanderbilt interest in the Western Union was so completely extinguished, last January; when subsequently the deliciously fresh and blithesome spirit of the Talented Young Vice President—whom we all remember as the De Sauty of the old concern—was instantaneously snuffed out; when a number of short-sighted, parsimonious officials were cast adrift to endure the hard trials which they had themselves so often imposed upon others; when the allegorical bushel of barnacles had been scraped off the old hulk, and when above all was recognized the master hand of General Thomas T. Eckert, there was a show of unbounded loyalty for the grand old concern which has rarely been equaled, in which this journal joined no less heartily; and for a time—remembering the brilliant management of the late American Union—a burst of sunshine seemed to bathe the whole profession with radiance and joy.

But the great disappointment came when the Sub Leaders—there are many of them throughout the country—took hold. A shadow then crept over the merry, toiling crew; the enthusiasm became dampened and hesitating, and the old story was soon repeated—the astute General mapping out a brilliant campaign, and the plans of his gifted brain palsied and misdirected by be-spangled and loud-mouthed martinets.

Your Sub Leader type of a telegrapher is one of the smart men of the business—that is, he advertises himself as such. He is a good man to hurrah and shout and carry the banner while some one else directs him, but when left to himself he is scarcely heavy enough for the undertaking. There is a good deal of talk and pantomime in such men, but there is little that is substantial. They are notoriously false and glittering. They

are alert, after a fashion, but blunder into all kinds of official holes. They are strict disciplinarians, apparently, but there is no intelligent or discriminating philanthropy in them. They are courteous and kind of heart, seemingly, but the sneaking look in the little eye betrays the dissimulating smile upon the lip. All of this class of men, soon after the consolidation, foolishly allowed the immediate but temporary advantage and personal prestige to be gained by hiring a “cheap man” to blind them to the intrinsic value of a good but rather more expensive one. Some of them went boldly at the question and reduced, or attempted to reduce, salaries wholesale. Others seem to have been seized with the belief—or at least, the willingness to believe—that while it might be a trifle unjust, or unwise, to appropriate a workman’s money, it was quite right to appropriate his time, of which money is only the representative. In some cases the larger offices, with regard to some departments of the service, were completely “cleaned out,” old men with records as high as 31 years, and whose names appear in Mr. Reid’s “Telegraph in America” as the earliest of Prof. Morse’s operators, being made to walk the plank in 1881, to make room for less competent but “cheaper” labor, thus indorsing the old Vanderbilt principle that if a man works for you you had better screw him down until life is barely left, and when by this process his peculiar dexterity is prematurely lost kick him out with a good conscience, to take some one else in his place on the same hard terms.

But the time has now arrived when some general investigation is necessary. The better class of operators desire no erratic spurts of philanthropy such as the recent paying of “double-extra.” There should be no mock heroics. You cannot stem the surging current of a mighty river by damming it up; you must look for and operate upon its many small sources. These lie in the original grounds of complaint, foremost among which are:

1. Inadequacy of pay before the consolidation.
2. Partial reduction of the same since the consolidation.
3. An attempt to abolish pay for “extra” service.
4. Increase of hours of labor, by adding half an hour’s, or an hour’s, work to each day.
5. The encouragement given to the student’s colleges by willingness to hire inefficient labor, on the sole score of cheapness.

The latter grievance, however, we can very well handle in our own way. Another, but less frequent, source of complaint is where the company makes a little “shave” off a sick man’s salary. A sick operator should, at least, receive the difference between his own salary and that paid to his temporary substitute.

As a matter of self-preservation the executive officers of the company should look into these affairs. By the hiring of a cheap and inferior kind of labor, messages are delayed or mutilated, and thereby, almost daily, trains are wrecked, husbands sent astray from their wives, fathers from their children, men and women die neglected, sales are lost, notes go to protest, and business men, pressed for time, are sent on all sorts of wild-goose chases. Good work depends primarily upon good pay, and all attempts to secure the former without the latter, no matter how tempting the prospect of big dividends may be, are certain to bring eventual failure upon the whole concern. Telegraphic work is not, like most manual labor, such as can be done in a humdrum and perfunctory way. It requires nice dis-

crimination, solid common sense and neatness of touch, and is a constant strain upon the mind of the worker. This kind of work can only be obtained by employing men whose long years of service have taught them to do, without telling, that which is exactly right in certain peculiar and extraordinary situations, and who, by long association with each other and familiarity with the business, know how best to serve the company’s interests.

Summary dismissals of faithful old men who have seen from a quarter of a century to thirty-one years’ active service in one situation; uncalled for reductions of salary, and the arbitrary increasing of hours of labor, already too long, are not the methods by which wise men, not blinded by mad dreams of economy, would seek to serve best the interest of the stockholders.

In our last issue we announced, upon the authority of the Cincinnati *Enquirer*, that Col. Clowry was about to be superseded by Mr. Chas. A. Tinker. In making the announcement we felt constrained to say that although Mr. Tinker was well-known as a reliable officer he was “not more so than Col. Clowry himself;” and, having thus recorded our opinion of Col. Clowry, it will scarcely be necessary to say now that we rejoice to hear that the report was an erroneous one. We have, therefore, great pleasure in reprinting the following denial of the rumor, clipped from the editorial columns of the same journal which made the erroneous statement—the usually accurate Cincinnati *Enquirer*:

“The *Enquirer* is glad to correct the report which has been extensively circulated of late, and which at first appeared to have responsible basis, to the effect that Colonel R. C. Clowry, General Superintendent of the Western Union Telegraph Company at Chicago, was to be succeeded by Mr. Charles A. Tinker, of the Baltimore & Ohio line. We make the correction on the authority of the managers of the Western Union Company at New York. Patrons of the company, more particularly those in the West, will be gratified to learn that Colonel Clowry is to be retained. He has many qualities which fit him for the important position of General Superintendent of the Central Division, and has won the esteem of all with whom he has business or social relations. By none are his abilities held in higher regard than by the Western Union Company, whose interests he has served so long and faithfully.”

We might also take this opportunity of paying a passing tribute to the industry and fidelity of this pioneer telegrapher, and of hoping that he may remain many more years in his present high position. We believe that another great telegraphic contest for supremacy is not far distant, and since Col. Clowry has always been known to be there when the battle commenced, and never to have left until the victory was gained, his company may soon find that he is preëminently the right man in the right place.

YOUR professional salary scalper has two grand objects in life. First, to trim sail so as to keep well up before the official wind; and, secondly, to make a “good showing financially” at headquarters. Since the consolidation, reasoning that an undisputed monopoly gave him the trump card, your professional salary scalper set out, smiling blandly, to execute both feats at once. It is not our fault if he has bitten off more than he can masticate. First of all, although he went around with a brass band and beat the gong, and although it was certainly a capital idea—for the company—the boys, somehow, didn’t “catch on” very enthusiastically. In fact, to be plain, the salary scalper’s efforts at economy failed miserably, owing to circum-



stances not wholly disconnected with the advent of the Mutual Union, Postal and other companies—not to mention the “Brotherhood of Telegraphers.” As for keeping well up before the official wind, your professional salary scalper aforesaid had a still more terrible time, since the official wind—fickle, as any other wind—has, during the past two months, been blowing all the way from due north to nor’nor’west, and back again to due north, thus taking up all the salary scalper’s vast amount of spare time in trimming official sail and “boxing” the telegraphic compass. Nay, after all is said and done, can it be possible that the ridiculous failure of these wonderful economists is due to—that is, is it possible that Gen. Eckert has been reading THE OPERATOR’S sound advice, given in our issue of August 1st, and that he has ruthlessly “sat down—hard—upon the devastating policy of those sub-officials who have no higher object than to ‘make a good showing’ financially?”

WHILE we have every respect for the rules of fair play, which guarantee to every man free trade, there can be little wonder if we discourage the wholesale manufacture of new members of a profession which cannot afford remunerative employment for those who are already engaged in it. While salaries are only kept at their present standard by extraneous methods, which, being understood in the proper quarter, it is scarcely necessary to explain here, it is wrong for these swindling concerns called “Colleges” to issue lying circulars, calculated to entice young men and girls from the country into studying telegraphy, and thus leading them innocently into a life which ultimately can only be one of miserable unprofitableness or downright idleness. In addressing practical operators there can be no use in dilating upon this subject; they can best deal with the subject themselves. Those who contemplate learning the business—which, according to the circulars of these “colleges,” is an exceedingly pleasant and desirable one, and may be mastered by any average boy or girl in a few months, when they can at once step into good situations at fabulous salaries—would do well to stop and consider why it is, if all these things be true, that operators should be so scarce as the same circulars show—in fact, why those who have learned and secured the alleged excellent situations at big salaries, do not remain in the business.

It is well known that up to the present time the success of working long wires and cables, quadruplex and duplex, is entirely due to the application of condensers to counteract the detrimental effects of the static charge and discharge of the line. This was an invention of Mr. J. B. Stearns, and, as his patent therefor in this country is the property of the Western Union Telegraph Co., other companies have been unable to create “phantom” wires, which are a source of immense profit to the Western Union. We are credibly informed that a new device, and one even more perfect than condensers, has been devised by a well-known electrician of this city, and that patents therefor are soon to be issued. The same gentleman invented a very simple system of sextuplex which was put up by the Western Union last year between New York and Philadelphia, and six Morse communications actually accomplished simultaneously. We understand he is securing patents also on two new systems of quadruplex, entirely independent of the Edison-Smith-Jones system now in use besides

two new duplex systems, all of which have proved successful on actual wires, and one of which does not even infringe the Page patent, and has done actual work on 500 miles of wire. It is a matter of congratulation to know that all our eggs have not been confined to one basket.

In illustration of the jaunty air of one of the President’s physician’s, who appears to be the *Mark Tapley* of the sad event, some of our esteemed contemporaries are referring to an old cable operator, De Sauty, who will be remembered by old-time telegraphers. De Sauty was the operator at the Irish end of the 1858 cable, the first of its kind; but, although the cable worked only for a few weeks, he obtained more fame out of it than its projectors did. The public on this side were being continually informed that the cable was working splendidly, and every message ended with the same phrase, “All right, De Sauty.” It is unnecessary to say that De Sauty became the laughing-stock of the whole country, and that when the cable finally collapsed De Sauty’s name sank into obscurity. His telegraphic fame still lives, however, and the curious may find it immortalized in some humorous verses in “The Autocrat of the Breakfast Table,” by Oliver Wendell Holmes. It might be interesting for our brethren at the forthcoming Old-timers’ reunion to take up the question, “What has become of De Sauty?”

THE International Congress of Electricians, “to codify, so to speak, electrical science, and to sound its depths,” will convene at the Palace of the Trocadero, Paris, this day two weeks. It is strange news to easy-going telegraph people to learn that M. Cochery has decreed that the meetings shall be secret, and that no prying member of the fourth estate of the realm shall be admitted. While we realize the fact that a Congress of Electricians which seems afraid of being raided by the police—or the newspapers—may still be a very harmless affair, since it is not known that Leo Hartman or O’Dynamite Rossa has been invited, yet we are at a loss to define their object in preserving a mysterious secrecy. There can be nothing desperate in “codifying, so to speak, electrical science and sounding its depths”—whatever that is—and we telegraphers want to hear what is going on, even if the Frenchmen won’t let us boss the job.

THE National Telephone Exchange Association, formed at Niagara Falls only one year ago, has in that short time grown to such dimensions that its forthcoming convention at Saratoga, next Tuesday, is looked forward to with intense interest. The rapid growth in seven months shown at their last gathering at Chicago April 5 and 6, was a matter of marvel to even its most sanguine supporters, and we are sure that the reports for the ensuing five months will not be less cheering. The exhibits made by the several manufacturers at these conventions are of great interest and value to those interested in telephones, and we expect to see a large gathering at Saratoga next Tuesday. We hope that, among other subjects, the feasibility of subterranean wires for telephones, and the prospects of adapting the telephone to long-distance ocean cable circuits will be fully and intelligently discussed.

THE fire in the reading room of the Electrical Exhibition, at Paris, attributed to a defect in the fitting up of some incandescent lamps, reveals a new source of possible danger from the electric light. It is little more than a year since the

British Museum, with its store of unique manuscripts and other priceless examples of literary production, was threatened with destruction through the same agency. Upon two different occasions a red-hot morsel of carbon dropped from one of the lamps, setting fire to papers, but the fire was each time promptly extinguished. We have little sympathy with the meddlesome countrymen who lose their lives every once in a while by fooling with the “brushes,” but if our electric light people expect to make a success of the thing they will have to provide means for avoiding disastrous fires through the use of their lamps.

BY the resignation of Mr. W. B. Somerville, the Western Union Company loses an efficient officer, while its patrons connected with the press find in the change many reasons for regret. For many years a journalist, Mr. Somerville was excellently qualified for his position as Superintendent of Press Transmission. He was equal to any emergency consequent upon a rush of press matter, and was always ready for any turn it might take, while his kind impulses and gentlemanly treatment of those who had dealings with the press department of the company will be kindly remembered by all. Now that he has once more resumed his literary spurs, which he won long ago, we welcome him back cordially to the field of journalism, where he may soon again prove his knighthood.

DISAPPOINTMENTS in regard to the biographies of subjects intended for Our National Portrait Gallery do not, it seems, come singly. Of the candidate for the present number, as in the case of that intended for last month, we have found it utterly impossible, after no end of writing and telegraphing, to secure sufficient data upon which to construct anything like a proper biographical sketch. Everybody who can give the information is “out of town.” We shall certainly be able to secure the points before next issue, and the reader would doubtless prefer the delay, annoying as it is, to the very incomplete sketch we could now offer them.

FROM the reports of what the opposition telegraph companies are doing, published in another column, it would appear that the consolidated company is not to be allowed to retain a monopoly of the business so long as some feared it would. Although the Mutual Union has all along kept very quiet, and its officers would give little or no information for publication, we have it from reliable authority that the company already has 10,000 miles of pole lines erected, and that when the Mutual Union opens for business it will cover so large a territory as to be thoroughly prepared for any reduction of rates tactics on the part of the Western Union.

IN consequence of the consolidation of the Canadian lines, operators there may now look for a little of the unpleasant experience through which we have just passed. Duplicate offices in the same town will be closed, and the dual force otherwise reduced, but we hope that the difficult duty will be more tenderly dealt with than it was in the rough-and-tumble American Union-Western Union transfer. The companies themselves may also experience some of our legal troubles, and we should not be surprised to hear of the case speedily in the Court of Queen’s Bench, which, we believe, sits this month.

AMONG all the wild claims made by Mr. Edison and his people with regard to electric lighting, nothing seems so absurd as their claim that Edi-



son's patent gives him "the exclusive control of incandescent electric lighting, both in this country and in Europe." Incandescent lighting covers a great many different methods, and while Mr. Edison may claim all that is due to him, he cannot set himself up as a monopoly in the business, to the exclusion of equally meritorious inventors. This will be held to be good law in the courts of France and every other civilized country.

A LONDON journal, the *Saturday Review*, in characteristically claiming for England all that is creditable in electrical science, mentions incidentally Cooke, Wheatstone, A. Graham Bell and other leading electricians as natural born subjects of her most gracious majesty, but still leaves us Edison, though matching his genius with that of an Englishman, Mr. Swan. This is the unkindest cut of all, since Edison, too, first saw the light under the English flag. We are, however, grateful that the *Saturday Review* has not laid claim to Franklin, Morse and Henry.

THERE are two things to which the "electro-technicians" about to assemble in congress in Paris might devote their attention: The safety of ocean cables in time of war, and protection of telegraph offices from unreasonable search by minions of the law. The first of these subjects might well be made a matter of international treaty, and the second might be covered by an official resolution on the subject. The delegates could then be instructed to make proper representations to their respective governments.

JUDGING by our correspondence, that "one man at Charleston," who, according to the plighted troth of a prominent official, had his salary reduced, takes the shine out of Falstaff's seven men in buckram for numerical strength. We have heard from him from the North, South, East and West, and everywhere he is plaintively crying, "Me too." He is about the most numerous "one man" we ever corresponded with.

IT seems worthy of note that an ocean steamship, some hundreds of miles out at sea, should be able to telegraph home that no needless alarm should be caused if certain casks and boat-gear were found adrift, since they had just been washed overboard. Yet this was the thoughtful action of the captain of the *Faraday*, the ship paying out our new cable.

To those officials who are contemplating the introduction into our system of stamps for paid telegrams, to be used as postage stamps are now used for letters, it may be interesting to know that Mr. Fawcett, the English Postmaster General, writing to a Welsh correspondent, remarks that the question of abolishing such stamps is now under consideration.

INVENTORS of underground systems of wires are multiplying fast, now that it seems certain that the aerial lines must go. As soon as it is plainly shown that we *have* to do it, it will be a cold day when your American genius cannot discover something that will obviate every difficulty now found in the present subterranean system.

THE luckless man who invented that electric lamp which, upon being placed in the Electrical Exhibition, promptly set fire to the establishment, will doubtless get left when the committee on awards come to deal out the medals.

WITH regard to the backwardness of the Electrical Exhibition, a witty French paper, just to hand, says the chief thing lacking there at present is—electricity.

## Notes and Queries on Electricity and Electro-Magnetism and Their Applications.

BY T. D. LOCKWOOD.

Practical as far as possible:  
Theoretical as far as necessary.

Q. 148. Have any steps been taken toward the general introduction of an improved wire gauge? If so, with what result?

A. It has been universally admitted that the necessity for a new and standard wire gauge is urgent, on account of the uncertainty and unreliability of the various gauges now in use. The Birmingham gauge has been nominally the standard by which wire has generally been sold, but it has been ascertained that this gauge varies with nearly every manufacturer, so that if wire is ordered of a certain gauge, there is no security that the wire received will be of the same size as the wire required. Moreover, the several sizes bear no regular relation to each other. For these reasons the necessity for a standard has of late been generally acknowledged. Preece & Sivewright, in their text-book on telegraphy, recommend a gauge based upon weight, giving many good reasons why such a standard should be introduced. This gauge was proposed by Messrs. Mallock & Preece.

It is, however, obvious that it is only adapted to one material, since, for example, a wire of copper a mile long, with a diameter of 120 mils., would weigh about 230 pounds, while an iron wire of the same diameter would weigh 200 pounds. In view of the increasing necessity for a standard, in 1879 a committee of the Society of Telegraph Engineers was appointed to consider the various wire gauges in use and proposed, and to report the most proper, if any, for general adoption. In the course of the committee's investigations, it was found that no less than fourteen gauges were in more or less general use, nine of which have the differences in the respective sizes formed arbitrarily or by no regular gradation. The other five are graded upon the principle of geometrical progression, and hence are called geometrical gauges.

The committee, after a careful consideration of each of the fourteen gauges, recommended the gauge of Mr. Latimer Clark for adoption as a standard.

This is a geometrical gauge, in which the gradations are so arranged that each size is 20 per cent. less in weight and electric conductivity than the one immediately preceding it. It varies considerably in many of the sizes from the old Birmingham gauge, but is nearer to it than any other of the geometrical gauges.

Notwithstanding the recommendation of this committee and the necessity of a standard, it does not yet appear that the manufacturers have taken the matter up practically, and the Birmingham wire gauge in all its delightful uncertainty is still, in this country at all events, considered as the wire gauge.

Q. 149. Should a large or small size gauge of wire be preferred for long lines?

A. The longer a line the larger should be the gauge of wire used, as illustrated by the fact that on the short private lines so well known in our cities Nos. 11, 12 and 14 are generally used. On telegraphs of ordinary length between cities; Nos. 8 and 9 are commonly employed, and for the longest telegraph lines—such as those between New York and Chicago, and New York and St. Louis—Nos. 6 and 4 either are, or should be, invariably used. The largest size used in England is No. 4, which is nearly a quarter of an inch in diameter.

Q. 150. What are the reasons for using large wires for long lines?

A. In the first place, the smaller the wire the more care is needed in insulation; the smaller a line wire is the less is its conducting power and, necessarily, the greater is its resistance. In a line the current from a battery has a choice of routes, so to speak, either to traverse the line wire, thereby arriving at the distant point, or to leak to ground over each insulator and down each pole. A certain amount of leakage does take place at every pole and, therefore, the current does actually divide between the two routes in direct proportion to their respective conductivities. Although the amount of electricity which leaks off at one pole is inconsiderable,

when we remember that there is an average of thirty poles to the mile, and possibly a great number of miles to the line, we see that the total amount of leakage is by no means inconsiderable. We must further consider that the resistance of a line wire increases in direct proportion to its length; that is, if a wire 100 miles long has a resistance of 1,000 ohms, when extended to 200 miles long the resistance will be 2,000 ohms—provided the wire is kept the same size. The sum of the whole being that every line, as it is made longer, decreases the resistance of its insulation by adding many more poles, at each of which there will be some leakage, while it also has the resistance of its proper conductor increased, because each mile of wire adds a mile of resistance. It is obvious, then, that to maintain the conductivity of the line at its proper standard, we must increase its size and thereby keep its resistance down. We shall, by so doing economize battery power, because reducing the line resistance practically shortens the circuit. By using smaller batteries we gain incidentally another advantage; namely, the decreased tension of the current and consequently its decreased ability to escape, or the greater ease with which it may be insulated. Another point in favor of large wires is that they are much more durable in proportion than small ones.

## Answers to Correspondents.

Is it a common occurrence for a Blake transmitter to act as a receiver? I have one that I am enabled to carry on conversation with without any telephone in circuit. Can you give the reason of its working that way? I hope to see the explanation in your next OPERATOR.

LEWISTON, Me.

A. G. K.

It is by no means uncommon for a Blake transmitter to possess the properties of a receiver.

This property was first discovered by Berliner, and is common to all microphones. The principle is embodied in a patent issued to him entitled a contact receiver. It is explained as follows:

If two electrodes be placed in contact to form part of a circuit, and a current of electricity be passed through them, a repulsion is exerted between them.

This force of repulsion may be weakened or strengthened by varying the strength of the current. As that strength is varied by any appropriate form of battery transmitter or speaking telephone, so will also the force of repulsion at the point in the transmitter which is being used as a receiver be alternately weakened and strengthened accordingly, and will therefore cause its plate to vibrate at the same rate and measure.

The latter vibrations being communicated to the surrounding air, the same kind of sound as uttered against the original transmitter will be reproduced at the second transmitter.

"G.L."—The Telegraphers' Mutual Union, of New York, like the Brotherhood of Telegraphers, of Chicago and other cities, and similar organizations throughout the country, is a society of telegraphers for mutual support, benefit and improvement, and incidentally of mutual protection. It is not a secret organization. When a member is out of work, the society endeavors to secure a position for him, and when he is sick he can draw a stated amount per week from the treasury, the other members in the mean time, as far as possible, in turn performing his regular telegraphic duties until his recovery.

G. C., TEXARKANA, ARK.—An ohm is the unit of electrical measurement, just as an inch is a unit in measuring distances. It is so called because first used by the electrician Ohm. An ohm is the unit of resistance to the passage of an electric current, and is about equal to the resistance of 330 feet of No. 9 iron wire of average quality.



### The Pioneer Telegraphers' Reunion.

To the Editor of The Operator :

SIR: Not half enough has been written in favor of the Old-timers' meeting, to be held at Niagara Falls, Sept. 20. Those who attended the reunion at Cincinnati last year need no urging to be on hand this time. All so thoroughly enjoyed it then that not one of them will miss the coming gathering if he can help it. But the attendance at Cincinnati, although large, was not half so large as it should have been. The telephone convention, held at that time at Niagara Falls, prevented many veterans from going to Cincinnati; the excessive heat usually experienced in the latter place in September deterred many others from going, and still a larger number who did not go would have gone if they had known what a splendid time awaited them. Now that a permanent organization has been made, and the finest place in America chosen for the next meeting, it seems as though there certainly must be a large attendance and a glorious time.

Grand old Niagara! It is probable that there are but few old-timers who have never visited that magnificent locality, but who among them all has not with each succeeding visit been more and more impressed with the beauty, grandeur and awe-inspiring scenes there so lavishly spread out by nature?

But this is only a small part of the enjoyment in store for those who attend the meeting. The greeting of old friends who may never be met elsewhere on earth; the brightening up and rehearsing of early reminiscences of matters connected with telegraphy and old associates in the business; the splendid drives; the banquet, which will undoubtedly be one of the best ever set before a hungry telegrapher. All these and many other excellent features embraced in the programme will make this an occasion that no one can afford to miss.

Let me add, right here, that John C. Lark will be there. Genial, jolly, jovial John C. Lark! Who does not know or has not heard of the "Great American Traveler?" Those who attended the Cincinnati meeting—especially those who took passage in the Highland Chief—will never forget the flood of rich stories and conundrums he favored them with, in his inimitable style, from the inexhaustible supply he has picked up in his extensive journeyings. John says he will be on hand sure.

All persons in good standing who were engaged in the telegraph business in any capacity previous to 1863 are eligible to membership, and may be received upon the payment of an initiation fee of five dollars. Those intending to join the association should write to Mr. J. C. Mattoon, Secretary "Old-Time Telegraphers' Association," care W. U. Tel. Co., Cincinnati, Ohio, at once, inclosing the five dollars. This sum will probably cover nearly, if not quite, all the expenses at Niagara Falls. SUBURB.

### "The Old Time Telegraphers' Association."

To the Editor of The Operator :

SIR: The time for the first meeting of the "Old Time Telegraphers' Association," organized at Cincinnati Sept. 7, 1880, is close at hand. The great increase and importance of telegraph business for some time past has prevented my answering much individual correspondence. A lack of time prevents a merited attention to a subject dear to veteran telegraphers. A fair enthusiasm and co-operation is urged from all interested. An inability to send circulars to those who might not easily have access to telegraph papers must be equalized by the individual efforts of each "old-timer" to make the notice of the next meeting at Niagara Falls, Wednesday, Sept. 21, 1881, as widespread as possible. I, inadvertently, announced the third Tuesday in September in the previous card. Please remember, it is Wednesday, Sept. 21. As to membership, the general understanding is that all who donated toward the "old-timers' reunion" are members, subject to whatever the per capita expense of the next meeting may be, which should not exceed five dollars, all others being subject to the initiation fee of \$5 for membership. This initiation fee from new members may be all that will be required, at least until the meeting, when definite action will be taken for the future guid-

ance of the Association. It has not been deemed advisable to attempt to arrange for reduced railroad transportation, but that each one will endeavor to make the best possible arrangements for himself, and that the various telegraph superintendents will be as consistently generous in this respect as possible. The Committee of Arrangements report their programme as quite complete—hotel rates reduced to \$2.50 per day, and to the various points of interest one-half the regular charges. It is hoped that each one will exert himself to swell the attendance. I would again urge that all who propose to attend send me their names. Remittances to J. C. Mattoon, W. U. telegraph, Cincinnati, Ohio. Final notice will be given in the next issue of the telegraph papers. J. C. MATTOON,

Sec'y "The Old Time Telegr's Ass'n."  
CINCINNATI, O., Aug. 27, 1881.

### Chicago Notes.

To The Editor of The Operator :

SIR: Please note following changes and personals:

Appointments: Assistant Chief Thayer to Eastern Division (New York wires), days.

D. L. Wilson succeeds Mr. Thayer as Asst. Chief on Detroit, Cleveland & Toledo wires.

Referring to personal notices of appointments last issue, your correspondent would make a correction, having been wrongly informed regarding an appointment that was rumored as about to take place. Assistant Chief Operator Mr. W. J. Lloyd was promoted from the Western Division (overland wires) to the Eastern (N. Y. wires) nights, succeeding Mr. W. R. Holligan, who was appointed a chief of full rank, vice Mr. W. A. Leary, resigned.

There are those in our profession to whose credit from time to time the favors of promotion are bestowed, and who do not lose in a disagreeable way by such promotions their identity as agreeable gentlemen of good sense and understanding. Your correspondent finds pleasure in declaring that he feels perfectly safe from denials in asserting that all who know the subjects of the last-named promotions, particularly those who have been in any measure affected thereby, will cheerfully accord the high meed of praise above mentioned, and further, that they have fairly won exalted reputations for strict probity of conduct, and as possessors of unusual talents and abilities. Modest, gentle and genial to an admirable degree, they move in their manifold duties with a quiet dignity and an earnest precision that wins the laudations of us all, and appears to assure for them an equality for any promotions to which they may be in the future called. Both young in years, yet their records would form an interesting and instructive biographical sketch. However, we beg their pardons, and spare them until we can add the notes of coming days and coming successes.

Resigned: Sam Wallace, *Inter-Ocean* private line, gone to Washington, D. C. J. McRobie (Asst. Chief N. Y. wires), gone to accept a chiefship in Peoria, Ill., where he hopes to regain declining health. Mac takes with him the unbounded esteem and best wishes of us all. Dave Stormont gone home to Cincinnati. O. M. Stone resigned to go into other and more profitable business.

Arrivals: Mr. Hutchinson, of N. Y.; James Adams, of Ottawa, Ont.; Mr. Wilson, of Clinton, Ia., and several others whose names are not at hand.

On Vacations: Asst. Chief Patten, Mrs. Prescott, Asst. Chief Thompson, and Mr. N. T. Callett.

Visitors: Supt. McMichael, from Minneapolis; Manager Wordsworth, from Cleveland; Hector Scott, Board of Trade, Milwaukee, and Levi Wild, from Ogden, Utah.

CHICAGO, Aug. 24, 1881.

### Baltimore Notes.

To the Editor of The Operator :

SIR: The telegraphers of Baltimore held a meeting Sunday, Aug. 14, for the purpose of forming themselves into an organization for the promotion, advancement and benefit of the members of the telegraphic profession. The association was called the Brotherhood of Telegraphers. At a meeting held Aug. 21 a constitution and by-laws were adopted. In case of illness a member is entitled to draw six dollars

per week from the association, provided he has been a member five months. The meeting was a thoroughly representative one, many old operators being present. Greetings are solicited from kindred associations in other cities.

The electric light is making wonderful progress here. Nearly all the large business places are using it with success. By the time of Baltimore's Oriolo festival, which takes place in October, it is thought that almost the entire city will be illuminated.

We regret to chronicle the serious illness of Mr. Jno. Hingerty, of the Union R. R., who is suffering from general debility.

The Mutual District Co., an opponent of the American District, has opened for business. It will be operated in connection with the Mutual Union Co. Mr. Geo. F. West is general manager. Mr. McCormick, of the Union R. R., has gone with the B. & O., also J. A. Glenn, of the P., W. & B. T. Llufrío has gone to Texas. Tom will be missed from the ranks. E. L. Bussard is convalescent and has gone with the A. U. T. J. Sullivan, of the Associated Press has resigned and gone to pastures new. Business lively at all offices; first-class men wanted badly.

BALTIMORE, Aug. 22, 1881. EXCELSIOR.

### TELEPHONE DEPARTMENT.

The Staten Island Telephone Co. is making good progress, and will soon be ready to open for business.

Several samples of anti-induction cables manufactured at the Bishop Gutta-Percha Works will be exhibited at the Saratoga Convention.

Ironton and Portsmouth, O., are now connected by telephone; distance 28 miles. Ironton and Proctorville are also connected; distance 24 miles.

The new cable of Mr. P. B. Delany, recently patented, by means of which telephone lines can be run underground without any inconvenience from induction, is highly spoken of by telephon men who have examined it.

Messrs. C. E. Jones & Bro., of Cincinnati, are getting ready to move into more extensive quarters, to accommodate their increasing business. They turn out a large amount of telephone apparatus, including the well-known Jones switch.

At the opening of the Electrical Exhibition, at Paris, the telephone was tried for Pr. ident Grévy with the Grand Opera, where the "Prayer" from "Masaniello," was sung by the full chorus, the experiment being perfectly successful.

An attractive new advertisement of Messrs. Davis & Watts will be found in this issue. This firm keeps well up with the rapid improvements in telephone apparatus, and can always be depended upon to furnish a high quality of instruments at a reasonable price.

Every one knows, says *Nature*, that the feeblest currents produce audible sounds in the telephone, which is more sensitive than any galvanometer to feeble currents. M. Pellat lately declared that the heat necessary to warm a kilogramme of water one degree would, if converted properly into the energy of electric currents, suffice to produce in a telephone an audible sound for 10,000 years continuously.

Judge Donohue, in Supreme Court, Chambers, has set aside the injunction granted, with the order to show cause, in the case of The People against the Metropolitan Telegraph and Telephone Company. The suit was originally brought by a number of property owners to prevent the defendants from erecting poles in front of their houses or hanging wires thereon. The grounds urged by the plaintiffs were that the Legislature, by its general acts, permitted the use of the streets for telegraphic poles and wires, but that the telephone people had no rights under that law, as the telegraph wire and the telephone wire were, in the eyes of the law, widely different things.

The telephone convention takes place, as already announced, at Congress Hall, Saratoga Springs, N. Y., on Tuesday, Sept. 6. Special rates of railroad fares have been secured. From New York and return by the N. Y. C. R. R. the fare will be \$5.50, tickets obtainable from Sept. 3 to 7, good to Sept. 15, at 413 Broadway and G. C. Depot. From Buffalo and return the rate is



\$9; Indianapolis, \$31.45; Cincinnati, \$27.80; St. Louis, \$30; Chicago, \$21.60. The terms at Congress Hall are to be \$3 a day for a single room occupied by one person; for a room occupied by two persons, \$2.50 a day each. It is believed that the convention will be largely attended. Many valuable reports will be presented.

The Law Telegraph Company will exhibit at Saratoga a new switch table which delegates to the convention should not fail to carefully examine. The principle chiefly involved in its construction, and one we think entirely new, is that which enables two, three or four operators, without leaving their seats, and each independently of the others, to work the same group of subscribers. The tables operated in probably three-quarters of the exchanges have forty to fifty subscribers each. As an illustration of the new table, imagine eight of these condensed into one table, 34 inches square, and the eight operators reduced to four, and seated one on each side of it. These four operators are entirely relieved from the work of sending to and receiving from seven tables orders for connections and disconnections, and are thereby enabled to wait on twice the usual number of subscribers. They can do this, too, with greater accuracy and more dispatch.

The Harrisburg (Pa.) *Telegraph* says it is a somewhat singular fact that an ordinary business man will put up with almost anything he makes use of except the telephone; but from the greatest invention of this or any other century—an instrument that daily saves him more time and labor than all his other improvements put together—he won't stand the slightest nonsense. He turns in a signal. If the answer does not come instantly he swears. He tells the central office the person he wishes to speak with. If the bell does not tap again before he can count a dozen he swears some more, and vows he could go and do the errand in half the time. The telephone, it adds, is the best thing of the age to bring out human nature. A man will show more of himself in five minutes before this delicate little machine than in half a year in ordinary ways. The *Telegraph* goes on to recommend that the bells be made with a little mirror, to enable some of those irascible people who think it strange that the telephone can't go out and harness up a horse for them, to see the latest and most improved specimen of a jackass.

## DASHES HERE AND THERE.

Western Union stock is quoted at 88½; last issue it was 89.

An attractive new page advertisement of the Utica Fire Alarm Telegraph Company will be found in the present issue.

If you want to become a telegraph operator, send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.

Two naval officers were killed at the torpedo station, Newport, R. I., Aug. 29, through carelessness in handling the electrical apparatus used to explode torpedoes.

In a re-arranged advertisement in this issue, the Bishop Gutta-Percha Works give cuts of a number of different cables, manufactured by them, including those for both telegraph and telephone purposes.

The cable steamer Faraday, after shipping four hundred tons of coil of the new American cable, sailed from Plymouth, England, Aug. 26, to resume the laying of the cable.

The Government cable steamer Newfield returned to Halifax, N. S., on the 25th ult., after a six weeks' voyage. Six splices of cable have been made and one cable from Grand Manor to Campo Bello and one from Campo Bello to Eastport have been laid.

A fire, similar to the recent one in the W. U. main office in this city, was discovered in the Titusville, Pa., W. U. office, Aug. 24. The fire was found to be at three different places where the wires—insulated though they were—touched the joist and cross-braces. It was put out without much damage.

Last week, at Elizabeth, N. J., Joseph Nevins, aged 26 years, while fixing electric light wires in the Bowker Fertilizing Works, was caught in the shafting and whirled rapidly around.

He was almost eviscerated. One arm was torn from its socket and both legs were broken. He died in a few hours. He leaves a wife and child.

Since the introduction of dynamo-electric machines a good many valuable watches have been almost completely ruined by having their works magnetized. Mr. Maxim, the electrician, has, however, invented a machine, now at the Paris Exhibition, which in a few minutes completely de-magnetizes a watch, leaving it as free in its movements as ever.

The Evans 26-shot sporting rifle, advertised by E. G. Rideout & Co., 10 Barclay street, is a great bargain. We are positively assured that the retail price of these rifles was \$40 each; any one can get the same rifle now by sending to the above-named firm only \$15. They offer to refund the money sent if the rifle is not as represented. Read their large advertisement in this issue.

Messrs. Partrick & Carter's new page advertisement in another part of the present issue will well repay careful perusal. This firm is as enterprising as ever; still turns out the high quality of instruments and apparatus for which it has become so well known among telegraphers everywhere; is constantly adding new and valuable specialties to its stock, and continues to sell good goods at remarkably low prices.

A dispatch from Newport, R. I., says that Capt. T. O. Selfridge, in command of the torpedo station, conducted some interesting and successful experiments on board the United States tug Nina between Fort Adams and Beaver Tail, on the 25th ult., in which he demonstrated the advantages of the system of electric lighting for war purposes on board ship, and by which torpedo boats from shore or from an enemy's ship could easily be detected.

Mr. A. B. Lyman, of Cleveland, O., advertises his well-known O. K. instruments in another column. This O. K. outfit gives so universal satisfaction to purchasers that Mr. Lyman advertises to send it C. O. D., with privilege to examine before any money is paid. This shows the confidence he has in the goods, which, however, is evidently well-founded, as he states that he has never had an instrument or outfit sent in this manner returned to him. Mr. Lyman also has a cheaper outfit, the Sheridan No. 2, which he furnishes for \$4.25.

A report was recently cabled from Paris to the effect that Edison's agent had procured the seizure of the Maxim lamps at the electrical exhibition, on the ground of an alleged infringement of Edison's patents for incandescent electrical lighting. A later dispatch, however, states that the story of the seizing is wholly untrue. It adds that no injunction has been issued having the effect of restraining the sale of the Maxim light or its exhibition at the Paris Exhibition. A descriptive injunction has been issued at Paris against the Maxim, but its friends claim has no such effect or operation.

From the report of the British Postmaster-General, just issued, we learn that the telegraph business in Great Britain continues to constantly grow. The aggregate of messages last year was 29,966,965, which showed a gratifying increase of 3,429,828. Never until now has this department been made to pay. Last year's receipts from telegrams reached a total of more than \$1,640,000, which paid the year's interest in full on the original outlay, all the expenses of the service, and left on hand a small balance. While the excess last year of the number of letters posted was only 4 per cent. over the former year, the excess in messages was 12.

While Superintendent Robert Sheehy, of the Brush Electric Light Company, with a number of men, was preparing on Saturday last to test the four lamps on the one-hundred-and-fifty-foot pole in Union Square, destined to illuminate the park, the hoisting gear at the top of the pole broke just as the lamps had reached the top. The lamps and their "carriage"—a heavy mass of iron weighing more than six hundred pounds—fell with a terrible crash, from the height of more than a hundred feet, on to the platform, twenty-five feet from the ground, upon which five men were working the hoisting apparatus. Two of them were fatally injured, one having died since, and the other being at the point of death. Three were more or less seriously injured.

The new metal of which it is proposed to construct pipes in which to lay telegraph wires under ground is described as very light—only about one-sixth the weight of iron—and, being composed almost entirely of pure carbon, is indestructible, whether in the air or under ground; it does not rust or change by exposure, and is not affected by heat or frost. The most important characteristic claimed for it, however, in connection with underground wires, is its being a perfect insulator. The pipes of the metal need not, it is stated, be buried very deep in the ground, as they may be of a semi-elastic character, adjusting themselves to the slight upheaval and depression of the ground through the action of frost.

A petition has been presented in Boston asking permission to lay tubes through the streets for the purpose of running telegraph and telephone wires underground. The proposed company, if the desired right of way—which wants it to be an exclusive one—can be secured, will lay wires at its own expense in terra cotta, and will let then to all applicants, including telegraph and telephone companies, for a royalty which they say they are willing that the city shall fix if it chooses. All lines owned by the city they promise to take free. The telegraph and telephone companies vigorously oppose the granting of the right, on the ground that, in the first place, it is impracticable, and, in the next place, it is merely a scheme to get control of a valuable right and then use it to make money. The new company has many prominent and wealthy men connected with it, and it is thought the desired permission will be granted at the next hearing, which occurs early in September.

## NEW YORK CITY ITEMS.

The body of William A. Irving, a telegraph operator of this city, who was drowned in the Hackensack River on Thursday, was found on Saturday last and sent to Speer's Morgue, Jersey City.

The linemen of Edison's Electric Light Co. have formed a class to study the elementary principles of wiring buildings for the electric light. Mr. E. H. Johnson delivered the first lecture to them.

Mr. W. B. Somerville, who, for two years past, has managed the business relations of the Western Union Telegraph Company with the newspaper press of the country, has resigned his position to re-enter upon the work of journalism.

The hours of duty of the A. D. T. managers, in the majority of the offices, were reduced from twelve to ten hours a day on August 19. The change, which was a much needed one, has given great satisfaction, and was largely the result of the efforts of the General Superintendent, Mr. Wm. F. Chester.

The officers of the Edison Electric Light Company state that the rumor of negotiations between themselves and the United States Electric Lighting Company are absolutely without foundation, and they have no intention whatever of entering into any such negotiations with the United States Company.

The city having awarded to the Brush Electrical Illumination Company a contract to light certain portions of the city in the neighborhood of Madison square, the company immediately proceeded to erect the necessary poles, etc. While working in West Twenty-fifth street, however, they were stopped by an injunction obtained in the Superior Court, by property owners, who claimed that the poles erected were unsightly and lessened the value of their property. The motion to make the injunction permanent was heard by Judge Speir, who rendered a decision denying the motion and dissolving the temporary injunction.

The stockholders of the Mutual District Telegraph Company, at a special meeting, voted to increase the capital stock of the company from \$250,000 to \$300,000. The stock of the Mutual District Messenger Company was also increased \$1,250. The new stock was at once taken by the syndicate which holds all the old stock, and of which Butler, Stillman and Hubbard are trustees. It is said that the purpose of the company in issuing the new stock is to provide money for construction, as the company is rapidly extend-



ing its lines above Fiftieth street. The Mutual District Company is merely nominal, it having been organized simultaneously with the telegraph company to save all questions of the right of the latter to transact a messenger business under the State law.

## PERSONAL.

Mr. H. M. Scott, of the Milwaukee, Wis., W. U. office, was married last week to Miss Hattie F. Wolcott, at Holyoke, Mass.

Miss Carrie Edwards, of the Detroit, Mich., W. U. staff, paid THE OPERATOR office a visit last week. Mr. G. J. Carroll, of the same office, also called.

Mr. Frankenberg, formerly of the government military telegraph service in New Mexico, is now working as operator for the Western Union at Baltimore, Md.

Messrs. Tom Kehoe and C. A. Butterfield, of Mobile, Ala., have resigned to go to Milwaukee and Philadelphia respectively. They are both first-class operators.

Mr. V. M. Moore, for some years connected with the W. U. office, at Henderson and Owensboro, Ky., has accepted a position as operator at Springfield, Tenn.

Mr. E. R. Scott, of Amherstburg, Ont., having returned from his Eastern trip, Miss Fox, who was filling his place, will probably be transferred for a time to the Windsor office.

Professor M. G. Farmer, electrician at the Newport torpedo station, has resigned, to take effect on Sept. 1. Professor Farmer has been electrician at the station for many years.

Mr. H. E. Sheets, formerly agent and operator at Lockwood, is now in G. R. & I. city office, Grand Rapids, Mich. Mr. W. J. Quinlan, at Stanwood, has resigned, and is succeeded by Mr. C. H. Clark.

Mr. W. H. Michener, Manager Mutual Union office, Foxboro, Mass., while taking equestrian exercise a day or two since, was thrown by a vicious horse and sustained a very severe shock to his nervous system.

Mr. Dennis J. Hern has been appointed Superintendent of the Eastern division of the Mutual Union Company, with headquarters at Boston. Mr. Hern is a well-known telegrapher, and his friends will be pleased to hear of his deserved good fortune.

Wanted—To know whereabouts of Silas Williams; last heard of in Indian Territory, five years ago; supposed to be in Texas now. Any information thankfully received by his brother, A. J. Williams, Mgr. W. U. Tel. Co., Elliston, Grant Co., Ky.

Mr. J. B. Bennett, of San Luis Obispo, Cal., is one of the most popular citizens of the town in which he resides. He is a good electrician, in addition to being a good operator, and takes an interest in everything pertaining to the telegraph and telegraph operators.

Mr. Nat Stewart, finding that he was not becoming wealthy upon the salary received for running the Western Union office at Lompoc, Cal., upon "commission," is now successfully engaged in running a fine "ranch" of his own near that place, which, by the way, is the centre of a flourishing temperance community.

Miss Josie A. Norcross, of Santa Barbara, Cal., is one of the best female telegraphers upon the Pacific coast. In addition to hard work in the telegraph office, she acts as agent for the steamship company at that point, a position which of itself is no sinecure. She is said to perform her duties to her employers "like a little man."

Mr. Fred. Anderson—more generally known as "Dad"—has resigned the night chieftainship at St. Paul, Minn., and gone to Milwaukee. He is succeeded by W. L. Gregory, formerly assistant to Clark Davison, Day Chief. H. E. Thompson has left the key, for a time at least, and is now connected with the St. Paul Electric Works.

At Deming, New Mexico, Mr. Gore is the manager of the Western Union, assisted by Mr. J. H. F. Schall, an operator well known upon the frontier. In the office of the Southern Pacific Railroad, at the same place, Mr. Sheppard is manager, with two or three assistants. Mr. Hartwell, ex-train dispatcher at Sacramento, is also at Deming.

Mr. Coons, ex-Manager of the Western Union at Bakersfield, Cal., is doing well in the jewelry business in that town. He was one of the oldest employes of the Western Union upon the Pacific Coast, and filled temporarily the office of District Superintendent. The cheap labor policy of the company changed Bakersfield from a salaried to a commission office, and, as is frequently the case, the Western Union lost one of its best men.

Captain Henry W. Howgate, who will be well remembered as Acting Chief Signal Officer, at Washington, under the late Gen. Myer, was arrested at Mt. Clemens, Mich., on the 15th ult., charged by the Government with embezzlement. The alleged frauds are chiefly in connection with the telegraph bills of the Signal Service, and are said to aggregate \$400,000. Captain Howgate has been held in \$40,000 bail. His health is in a precarious condition.

N. C. AND ST. L. PERSONALS.—Chattanooga Division: Charley Heard is operator and freight clerk at Chattanooga, Tenn.; Sam E. Rowden, agent and operator, Wauhatchie, Tenn.; Jno. Morgan is at Whiteside, Tenn.; Sam Ingersoll, at Shellmound, Tenn.; E. W. McGaughey, at Bridgeport, Ala.; Si Willis, day operator, and Wm. Huddleston, night, at Stevenson, Ala.; Jesse Horn, agent and operator at Sherwood, Tenn.; Wm. Stewart, agent and day operator, and M. L. Williams, night, at Cowan, Tenn.

SALAMANCA, N. Y.—The American Rapid Telegraph Company proposes to compete for the \$300 per month business done here exclusively by the W. U. Among the operating fraternity who aspire to higher positions in the dismal future are Thos. W. Potter, Manager; Wm. Melhuish, Assistant Manager; J. S. Taggart, Geo. Rigdon, Geo. W. Leveridge, J. C. Kuhn and S. C. Keynon. The two latter are United Pipe Line men. Among those on the retired list are Wm. Mulcay and Chas. Frank. The latter has been running a student mill (where he was formerly employed, at the Pipe Line office), and had no less than five under instruction when he was nipped in the bud and cast out to the mercy of the winds and waves, to be tossed on the tempestuous sea of life to look for a job. Charlie is a good fellow, but the glitter of filthy lucre (probably \$25 per head) was too much for his avaricious disposition; he took them in, and thus the old, old story, they beat him.

CHATTANOOGA, Tenn.—Mr. J. B. Norris, manager of the American Union, was appointed manager of the consolidated company on the 1st of July, vice Mr. Norris R. Young, resigned. The latter has since been appointed night manager. The day force has somewhat changed, and several new faces are to be seen. They are arranged as follows: Billy Burton, day chief; A. M. Pennock, acting wire chief; Jack Riley, N. Y. duplex; Charles Skelton, New Orleans quad; Sam. Swartz, Montgomery quad; Charles Davidson, Atlanta and Nashville; David Campbell, Washington press; J. E. Martin, Memphis single; Fred. Meyer, Mobile and St. Louis duplex. On the night force are: N. R. Young, chief; E. M. Hickey, New York duplex; John R. Terhune, Southern press, New Orleans quad; Chauncey T. Raymond, Washington press. A new addition to the through circuits is "the Augusta quad," Cincinnati and St. Louis working it, thus making a more complete outlet for Southern business.

## BORN.

WEEKS.—Aug. 25, to Henry Weeks, Jr., Manager American Rapid Tel. Co., Rochester, N. Y., a daughter.

WOLCOTT.—Aug. 26, to J. E. Wolcott, Agent Valley R'y, and Manager W. U. Tel. Co., Greentown, O., a son.

## MARRIED.

CHAMBERS—CURD.—Aug. 24, Mr. W. D. Chambers, agent and operator C. S. R. R., Burgin, Ky., to Annie B. Curd.

SENFT—DETTRA.—Aug. 4, 1881, at the parsonage, near Sellersville, Pa., by the Rev. J. G. Dengler, Mr. A. A. Senft, Night Operator and Ticket Agent at Germantown, Philadelphia, to Miss Laura Dettra, eldest daughter of Mr. J. K. Dettra, of Souderton, Pa.

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Telegraphic, Telephonic and Electrical Science, Literature, News and Progress  
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As an organ of opinion, THE OPERATOR is FIRST, LAST AND ALL THE TIME FOR OPERATORS AND THEIR BEST INTERESTS. It circulates in every quarter of the globe, wherever the telegraph is worked.

"Such a paper is only possible among an intelligent staff of men, such as work the American lines."—*Telegraph in America.*

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To any one sending us a club of

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## Scarf Pins and Bosom Pins,

IN THE FORM OF

Miniature Telephones.

These articles of jewelry are of the Best Workmanship in Gold, and aside from their distinctive merits as Emblematic of the Telephone Profession they are Unique and Elegant Ornaments.



TELEPHONE PIN (full size).

The above cut shows the Miniature Telephone, full size, fitted as a Badge or Bosom Pin. The Scarf Pins are fitted with long straight pins instead of the short clasp pins.

We are now ready to supply this fine jewelry at the following extremely low prices:

	Solid Gold.	Rolled Gold.
Telephone Badge or Bosom Pin	\$5.00	\$2.00
Telephone Scarf Pin	5.00	2.00

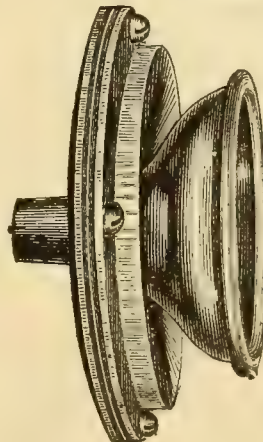
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Address, **W. J. Johnston,**  
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Is Acknowledged the Best in Every Particular by Everybody.



It is made WHOLLY OF METAL, Nickel-Plated and Highly Polished; an ornament to any room or office. It is self-adjusting, requiring no BRACKET or even a screw to hold it in place. It takes the place of the cheap wood and parchment affairs everywhere. Address with stamp for Illustrated Descriptive Circular and Prices,

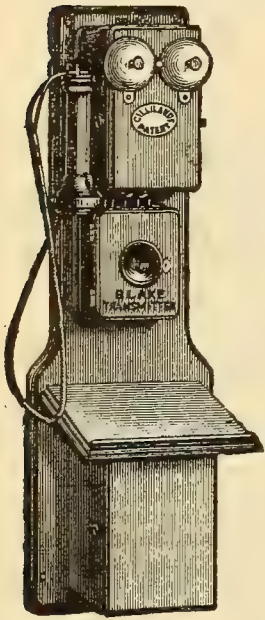
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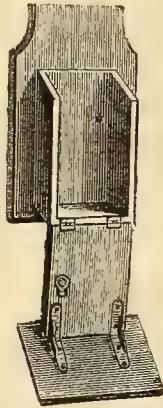
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E. T. GILLILAND, General Manager,

INDIANAPOLIS, Ind.



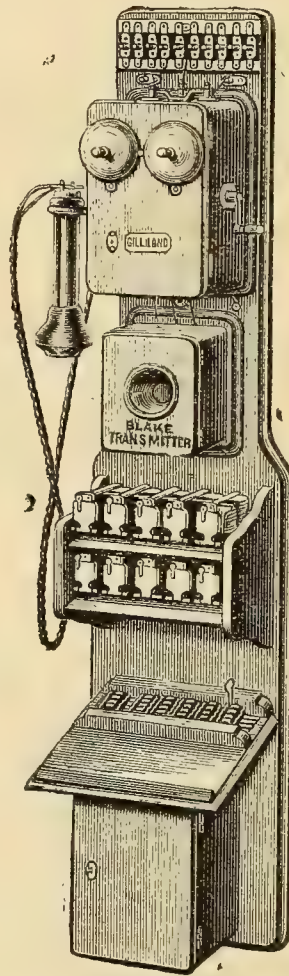
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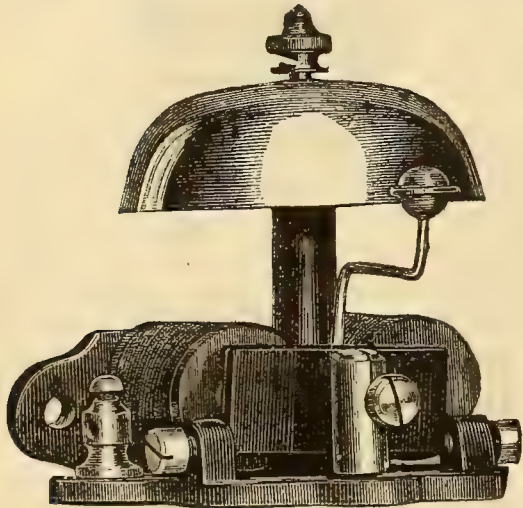
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The attention of managers of Telephone Exchanges is specially invited to this article. They are INVALUABLE where many lines converge from a given point, the insulating substance being used also as an index for lines.

Price 7c. each, with Screws and Washers and Ground Connection complete—\$6 per 100.



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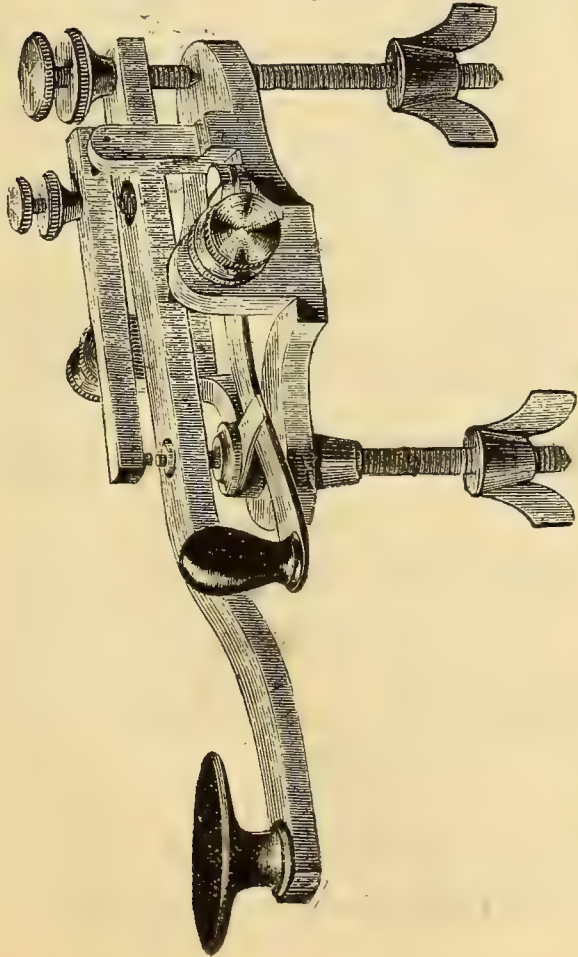
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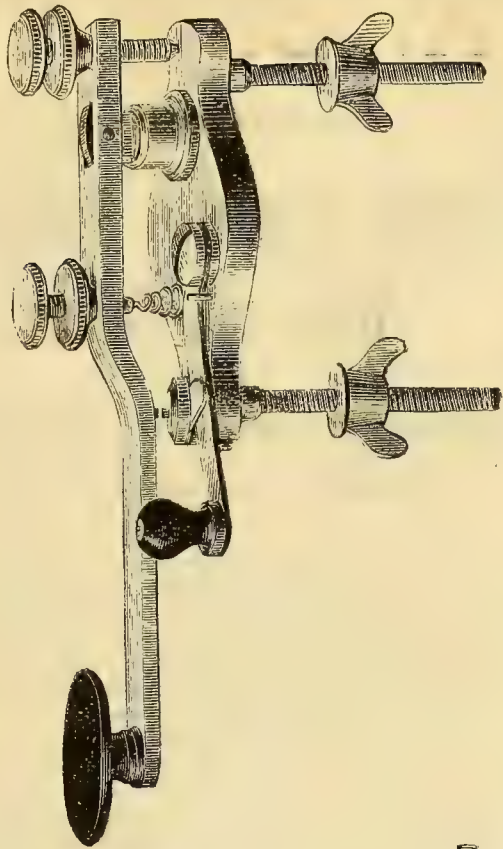
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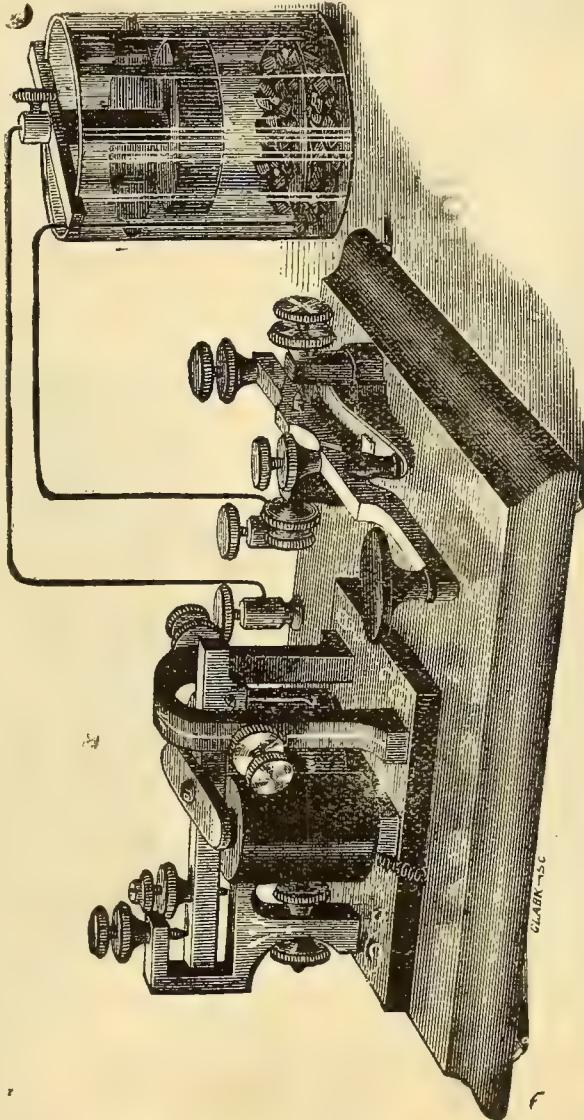
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Instruments only, without Battery, sent by mail, 25 cents extra. Remit by P. O. Money Order, Draft, Registered Letter or Express. No goods sent C. O. D.

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OF ALL QUALITIES.

No. 6 Wire in  $\frac{1}{4}$ -mile bundles, 550 pounds per mile.  
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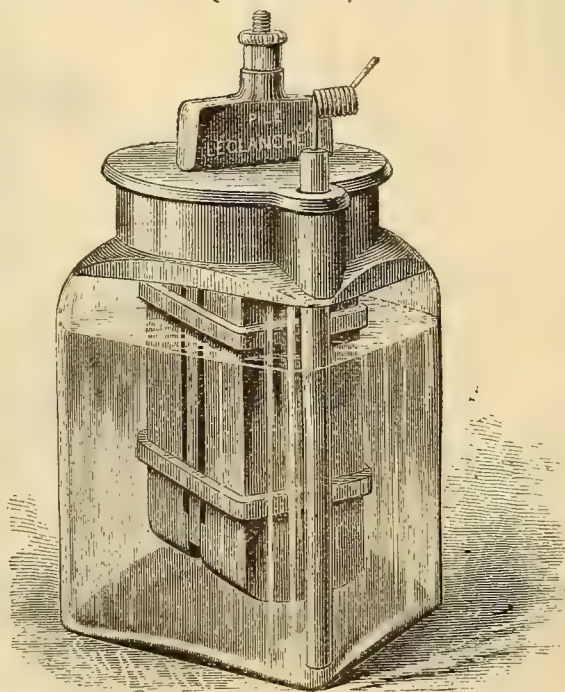
This Wire possesses the highest electrical conductivity, which is necessary to make Telegraph and Telephone Lines work with certainty and ease.  
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## GREAT TELEPHONE BATTERY.

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Free from acid. Emits no odor. Does not get out of order. Lasts without renewal from six months to several years, according to use.

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The attention of the public is called to the new form of Leclanche Battery, in which the porous cell is dispensed with and for it substituted a pair of compressed Placques or Prisms, which are simply strapped to the Carbon (as shown in cut).

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The necessities of the telegraph business requiring an indestructible insulation, stimulated me to the discovery and perfecting of my compound known as Kerite, which combines the great advantage of durability with perfect insulation.

Kerite insulation is proof against the action of the corrosive elements in the earth, air and water; and, where it has been practically tested, has proved its superiority to all other insulation.

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It is not injuriously affected by the extremes of heat and cold, experienced in our climate, nor by length of exposure in the atmosphere.

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The action of water, salt or fresh, not only protects all its qualities, but very much improves its insulation.

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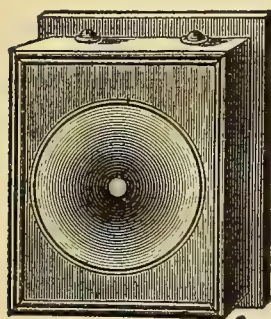


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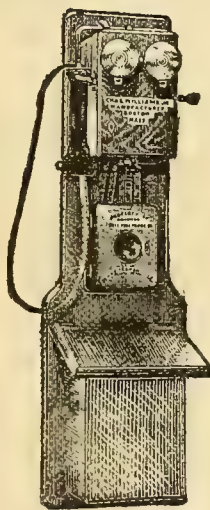
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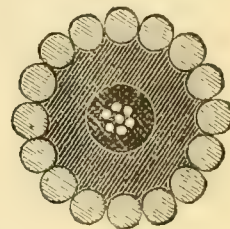
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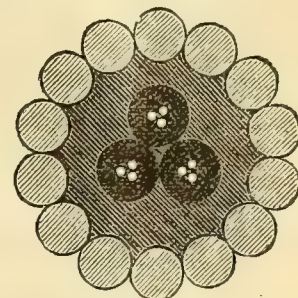
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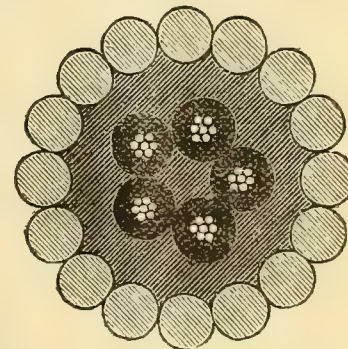
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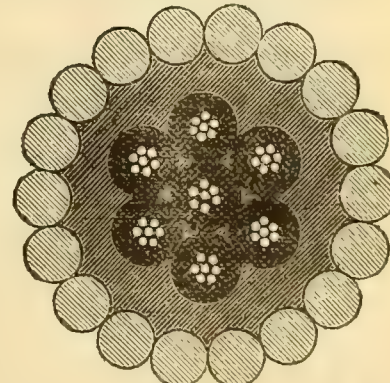
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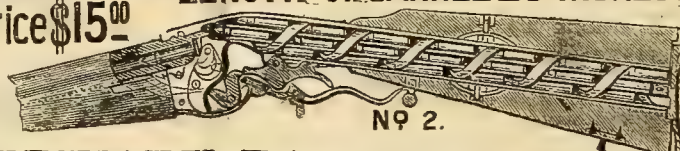
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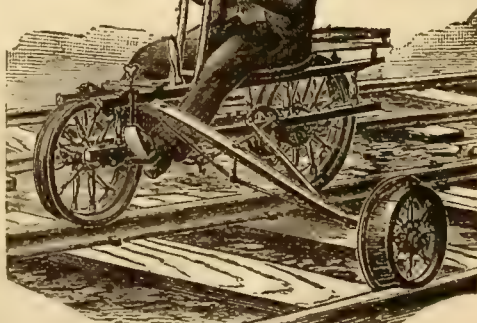
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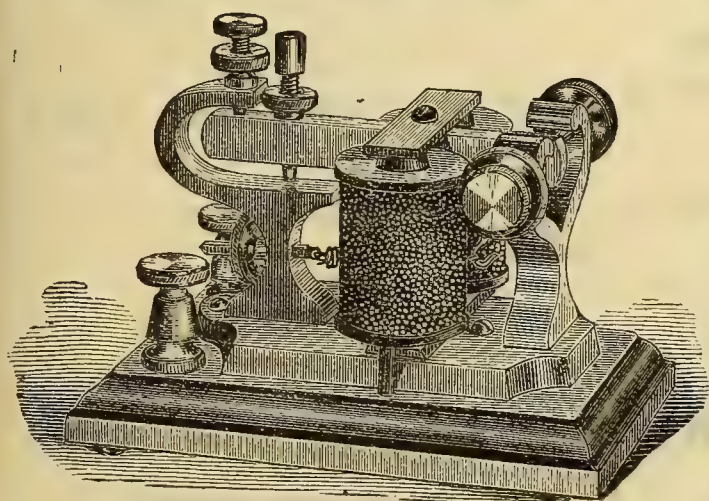
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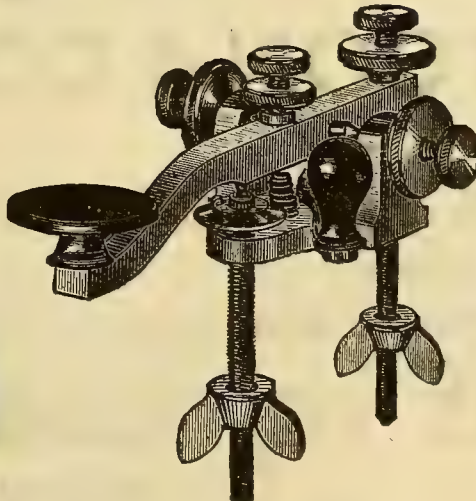
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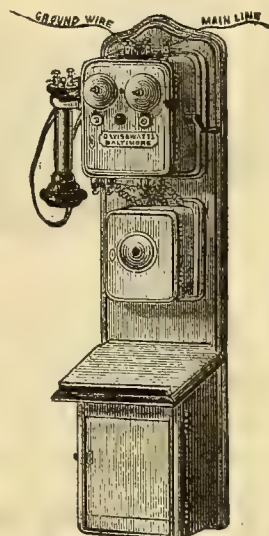
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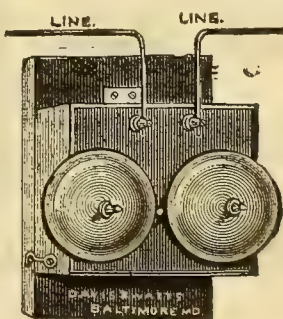
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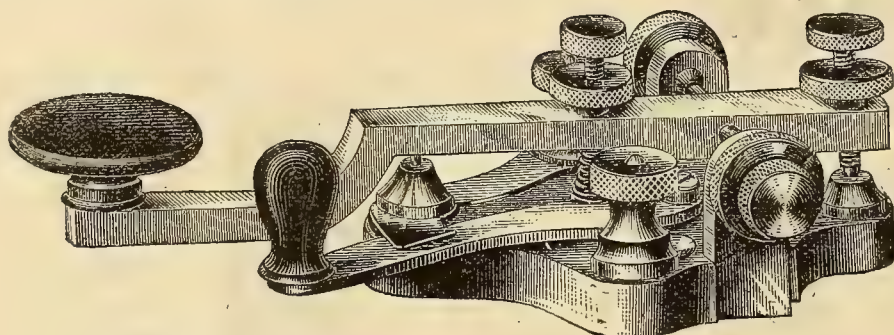
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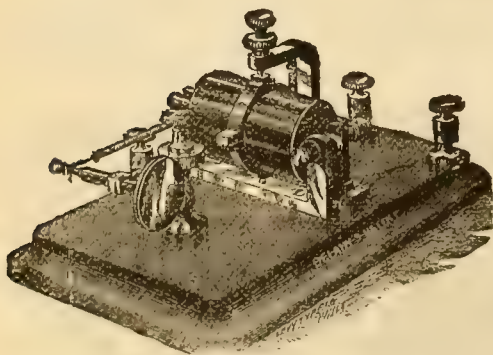
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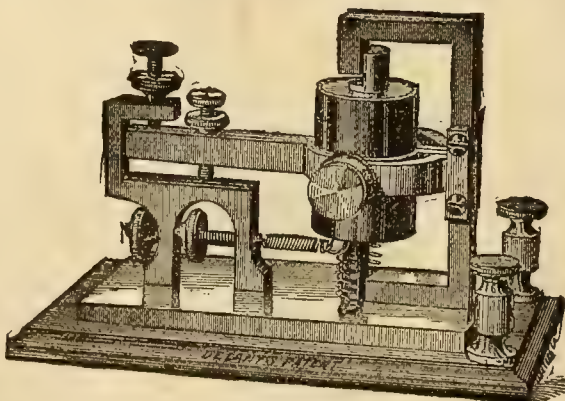
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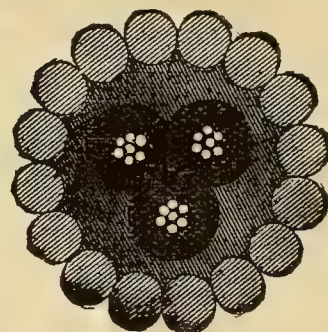
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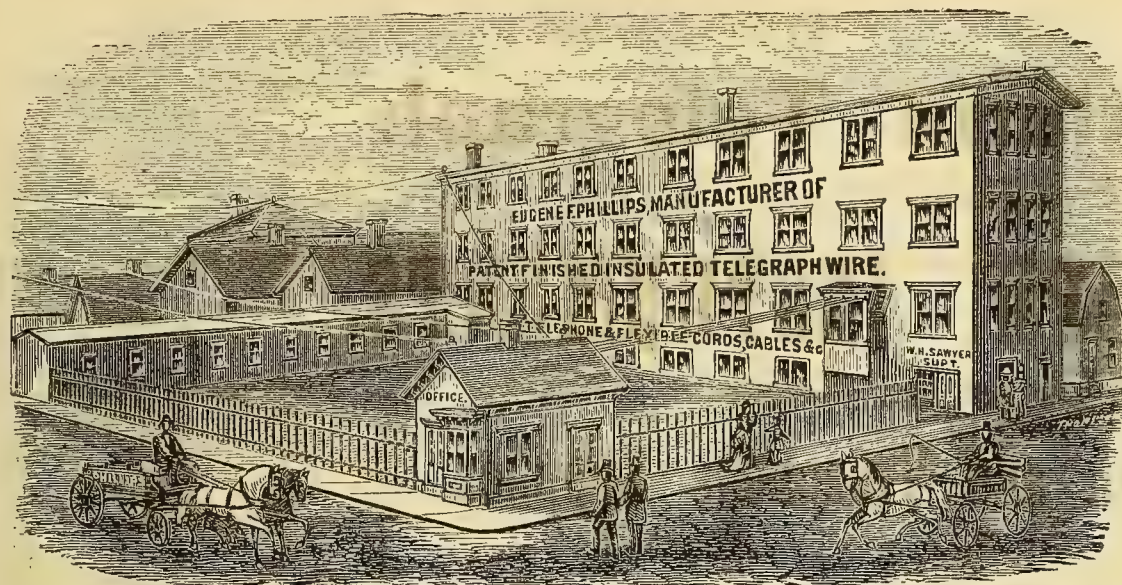
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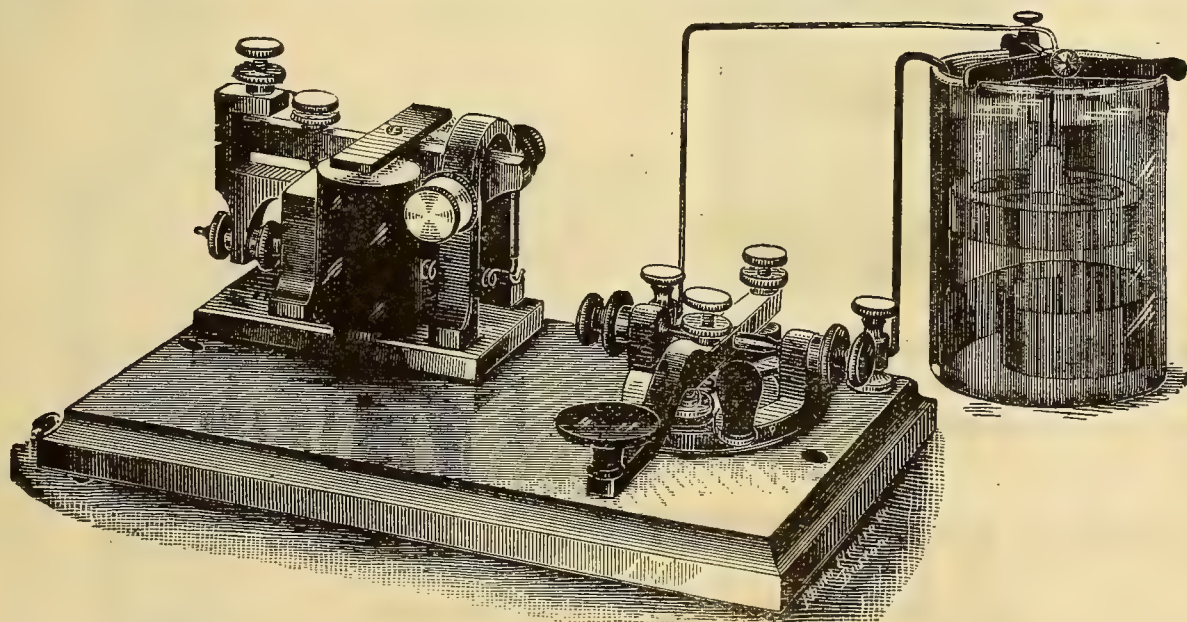
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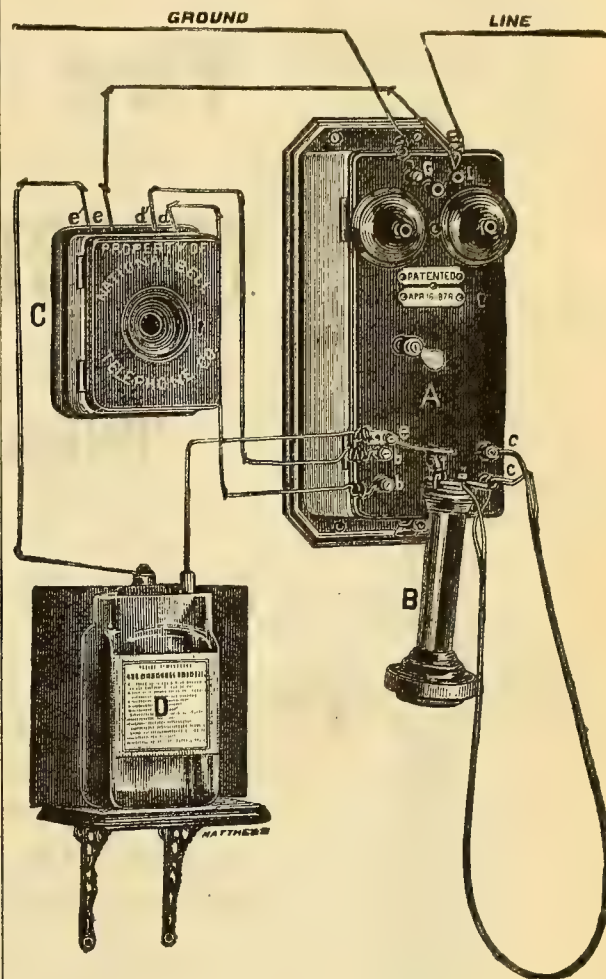
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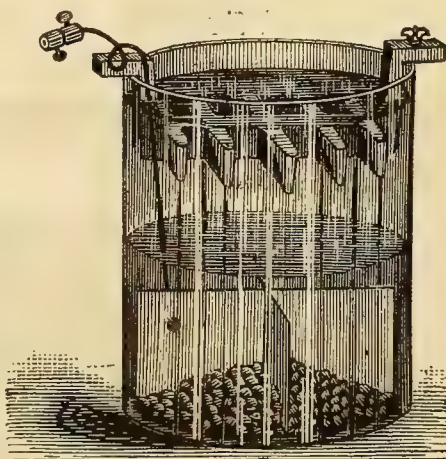
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## Telegraph and Telephone Supplies.

Agents for the Central Electric Gas-Lighting and Extinguishing Co.

**SPECIALTIES OWNED AND CONTROLLED BY US.**—The only Electro-Mechanical Non-Interference Fire Alarm Telegraph Signal Box. The only Electro-Mechanical Balanced Hammer Tower Bell Striker. The only Electro-Mechanical Anti-Adjustment Gravity Armature Gong Strikers.



Authorities of towns, either contemplating the introduction of a complete System of Fire Alarm Telegraph, or an extension of their old ones, should not fail to examine our recent improvements in Fire Alarm Telegraph Instruments, including our improved Pony and Medium Plain Signal Boxes. Our

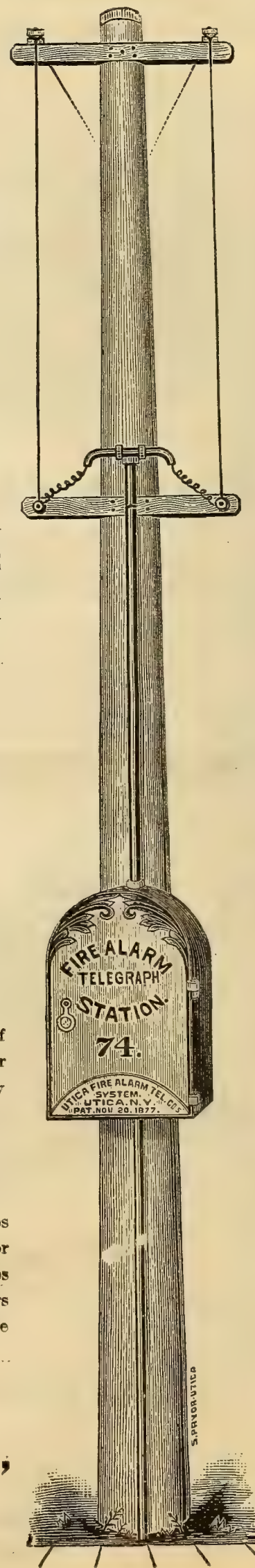
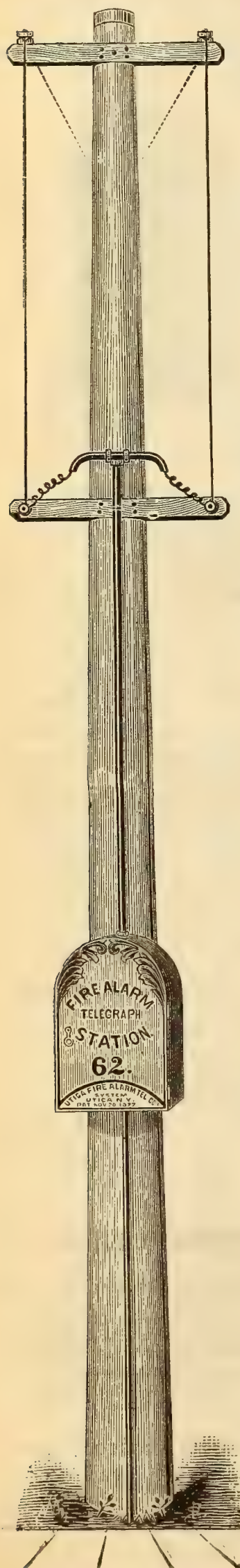
### ELECTRO-MECHANICAL NON-INTERFERENCE SIGNAL BOX,

which was invented by us, was patented by us and is controlled by us. It simplifies non-interference, and thereby makes it practical. Electro-Mechanical Gong Strikers for Engine Houses and Engineers' use; Electro-Mechanical Tower Bell Strikers for all sizes of bells—the only Balanced Hammer Tower Bell Striker in existence; Automatic-Repeaters for any Number of Circuits; Switch Boards, Galvanometers and all materials for the equipment of Fire Alarm and other Telegraph Systems.

ADDRESS,

## UTICA FIRE ALARM TELEGRAPH CO.,

Manufactory, 106 and 108 Liberty Street,  
UTICA, N. Y.



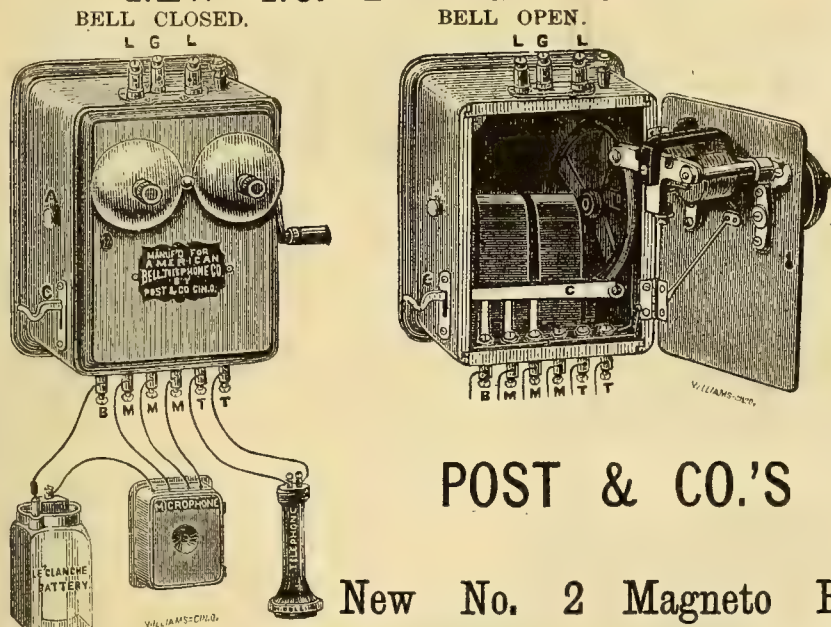


# TELEGRAPH AND TELEPHONE DEPARTMENT POST & COMPANY.

LICENSED MANUFACTURERS OF AMERICAN BELL TELEPHONE CO.

Manufacturers of all kinds of Telegraph, Telephone and Electric Light Supplies

## NEW NO. 2 MAGNETO BELL.



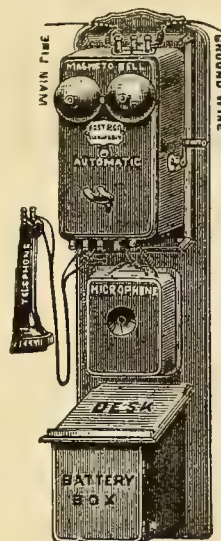
POST & CO.'S

## New No. 2 Magneto Bell.

CINCINNATI, Aug. 1, 1881.  
We have just perfected our New No. 2 Automatic Magneto Bell (as per cuts), and are now ready to furnish same to Exchanges and Agents of the American Bell Telephone Co. We guarantee same to ring over 10 miles of wire. We have given great attention to the construction of these bells and they will be found just the bells for short lines of all kinds—will gladly send out one bell or a case of 6 on approbation, to be returned if not satisfactory.

We call especial attention to our new switch-boards as being simple and substantial, NO CORDS TO GET OUT OF ORDER. We make them from 6 lines each up to any size wanted. Send for cuts of same. Our new battery boxes open down the front, so as to get at battery easy. We make them two sizes, for each size bell, also very fine ones for parlors and fine offices. Samples of our bells, etc., sent on application. Agents for Roebling's line wire. A full line of OFFICE WIRE, BRACKETS, INSULATORS, etc., on hand at all times at VERY LOWEST prices. Send for catalogue and prices.

## Standard No. 1 Magneto Bell, 20,000 in use.



Below we give a few important changes we have just made in our Standard Magneto Bells, making them the strongest and best Bells made. All of these important points fully covered by Letters Patent.

1st. Our Horse Shoe Magnets, large and small, are made to lift six times their weight; none are passed unless this result is obtained. This strength is secured by means ONLY KNOWN TO US.

2d. The cylinders of our engine are metallic and inclosed so as to prevent escapes of any kind, and also prevent dust from accumulating on the armature, which in a very short space of time would wear out and destroy the GENERATING POWER of the ENGINE. Other makers NECESSARILY leave the sides open.

3d. Our switch is so constructed that it prevents lightning in ANY FORM from ENTERING THE MICROPHONE, by cutting out the primary and secondary coils entirely—a feature that no other box now manufactured has, and fully covered by our letters patent.

4th. We make the Automatic Hook Bell to use with the PONY CROWN TELEPHONE. NO EXTRA CHARGE. No posts on front. Connection made at top and bottom of Bells.

5th. All Bells tested to not less than 12,000 ohms resistance.

6th. We have so arranged the RINGER, GENERATOR, and FRAME work of our Bells that they can be easily adjusted without disturbing the wires in any manner or moving the base-board or bell.

7th. Test of Standard Magneto Bells at Exposition, Oct. 1, 1880. Williams Magneto Bells rang through 11,800 ohms resistance, equal to say 370 miles No. 12 wire.

Post & Co.'s Magneto Bells rang through 19,775 ohms resistance, equal to say 625 miles No. 12 wire.

The record of this test is taken from Report of the Jurors in Class 77 on Electrical Instruments, and NEEDS NO COMMENT, as it shows our Bells have nearly double the strength of the others. The Gilliland Bell did not come in, although APPLICATION had been filed to enter same for competition. The jury awarded our Bell the HIGHEST PREMIUM—A SILVER MEDAL.

Respectfully,  
POST & COMPANY.

POST & COMPANY, CINCINNATI, O.

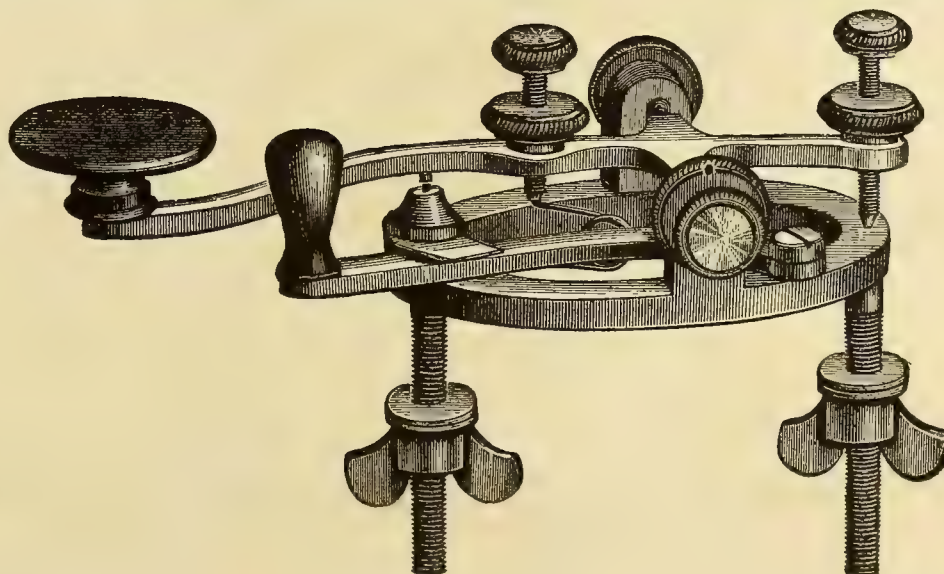
# J. H. BUNNELL & CO.'S NEW STEEL LEVER SOLID TRUNNION KEY

J. H. BUNNELL & CO.,

112

LIBERTY STREET,

New York.



BEST IN THE  
WORLD.

PATENTED Feb. 15  
1881.

We have much pleasure in being first to make and bring to the notice of Telegraphers and Managers of Telegraphs this new and important improvement in keys.

We offer it as being *more durable* and in every respect *better* than any other for rapid and perfect sending for the following reasons:

The lever is *only one-half the weight* of the ordinary brass lever, as generally made.

The entire Lever and Trunnions together being made of *but one piece* of fine wrought steel, the common defect of loose trunnions is avoided, the strength of a heavy brass lever is obtained with much less weight of metal, and, by the perfect bearing which the solid trunnion gives, together with the use of *hardened platina points*, *sticking is absolutely prevented*.

The size and proportions are such as to make it the most perfect operating key possible to obtain, either for the hand of the skilled and rapid expert, or the beginner.

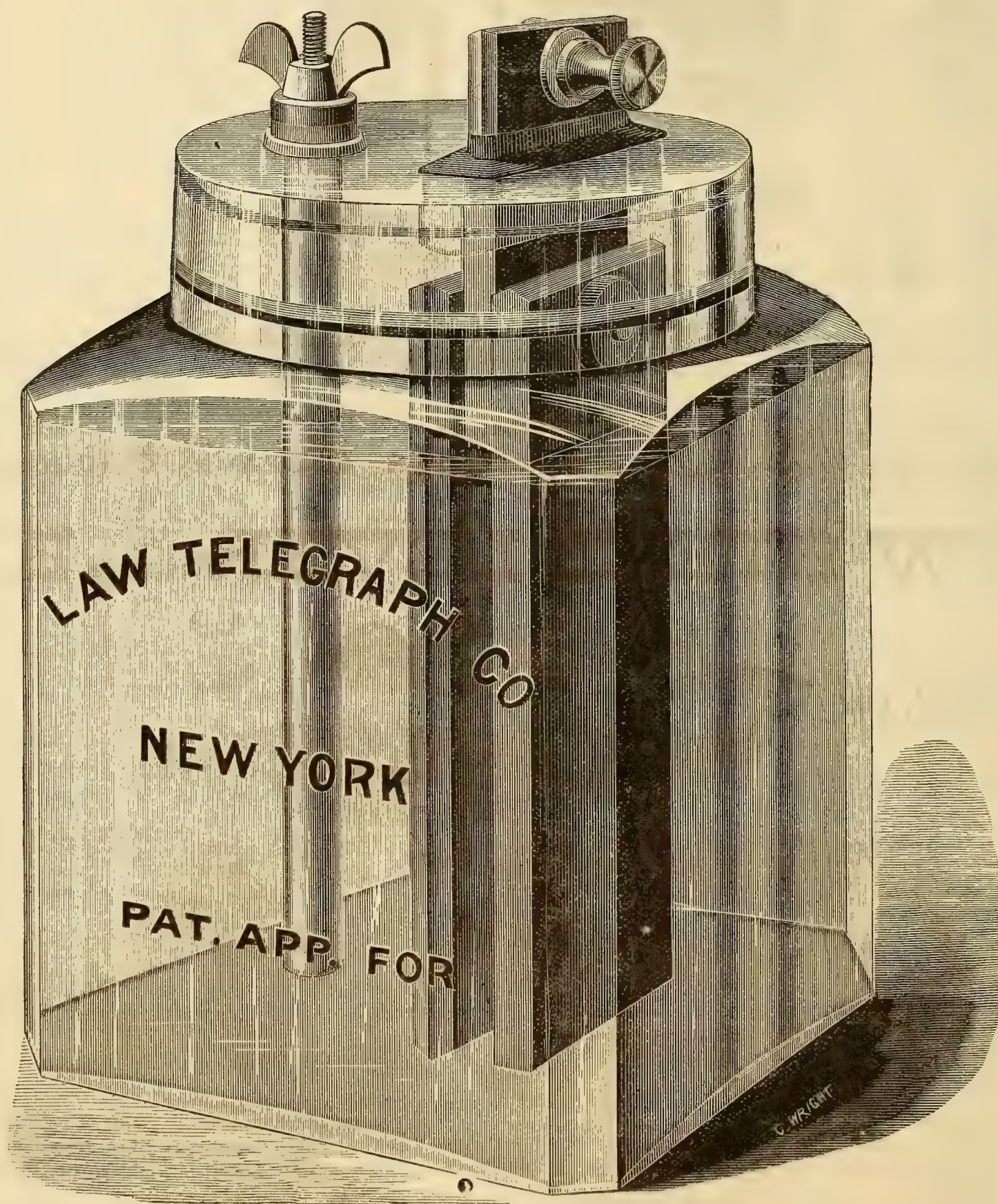
PRICE, \$3.00. FINELY FINISHED, AND LEVER NICKEL-PLATED.  
LIBERAL DISCOUNT ON ORDERS FOR COMPANY SUPPLY.

Steel Lever Key sent by mail post paid, to any part of U. S. or Canada on receipt of the above price, by registered letter or money order.



# THE CELEBRATED "LAW" BATTERY, For Telephone Transmitters.

No Expensive "Prism" to Renew.

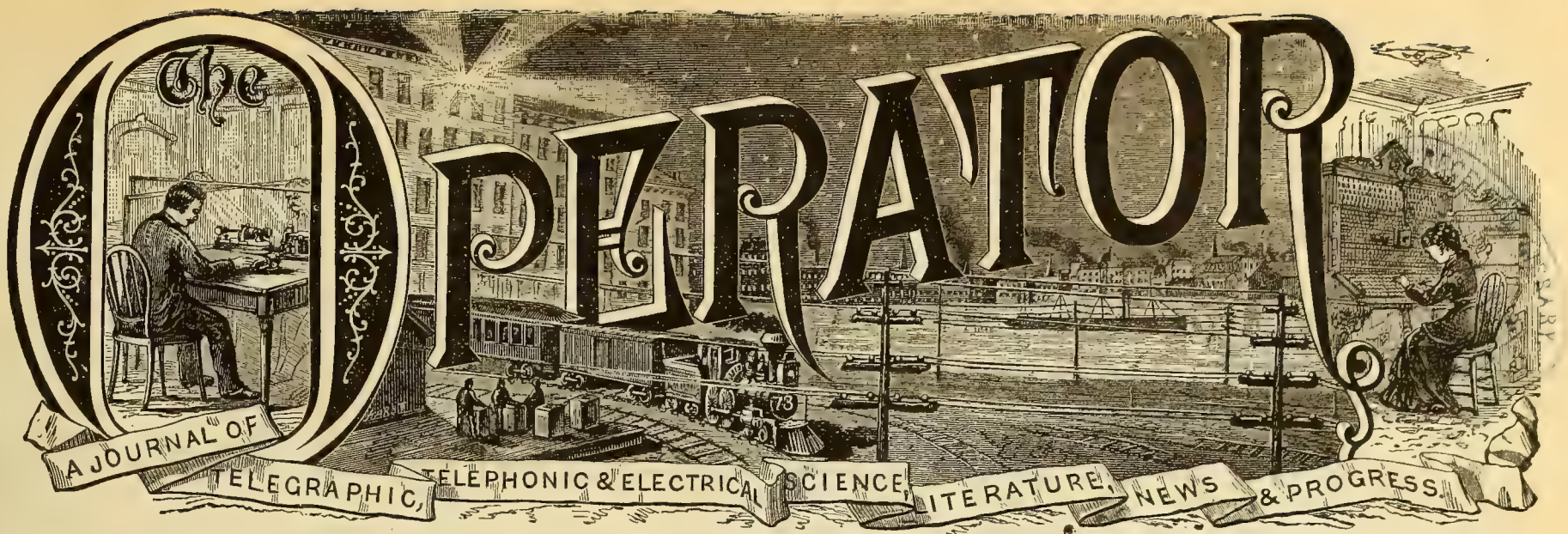


No Hidden Corroding Connection.

FOR SALE BY

LAW TELEGRAPH COMPANY, New York.  
WESTERN ELECTRIC M'F'G CO., New York and Chicago.  
GILLILAND ELECTRIC M'F'G CO., Indianapolis.

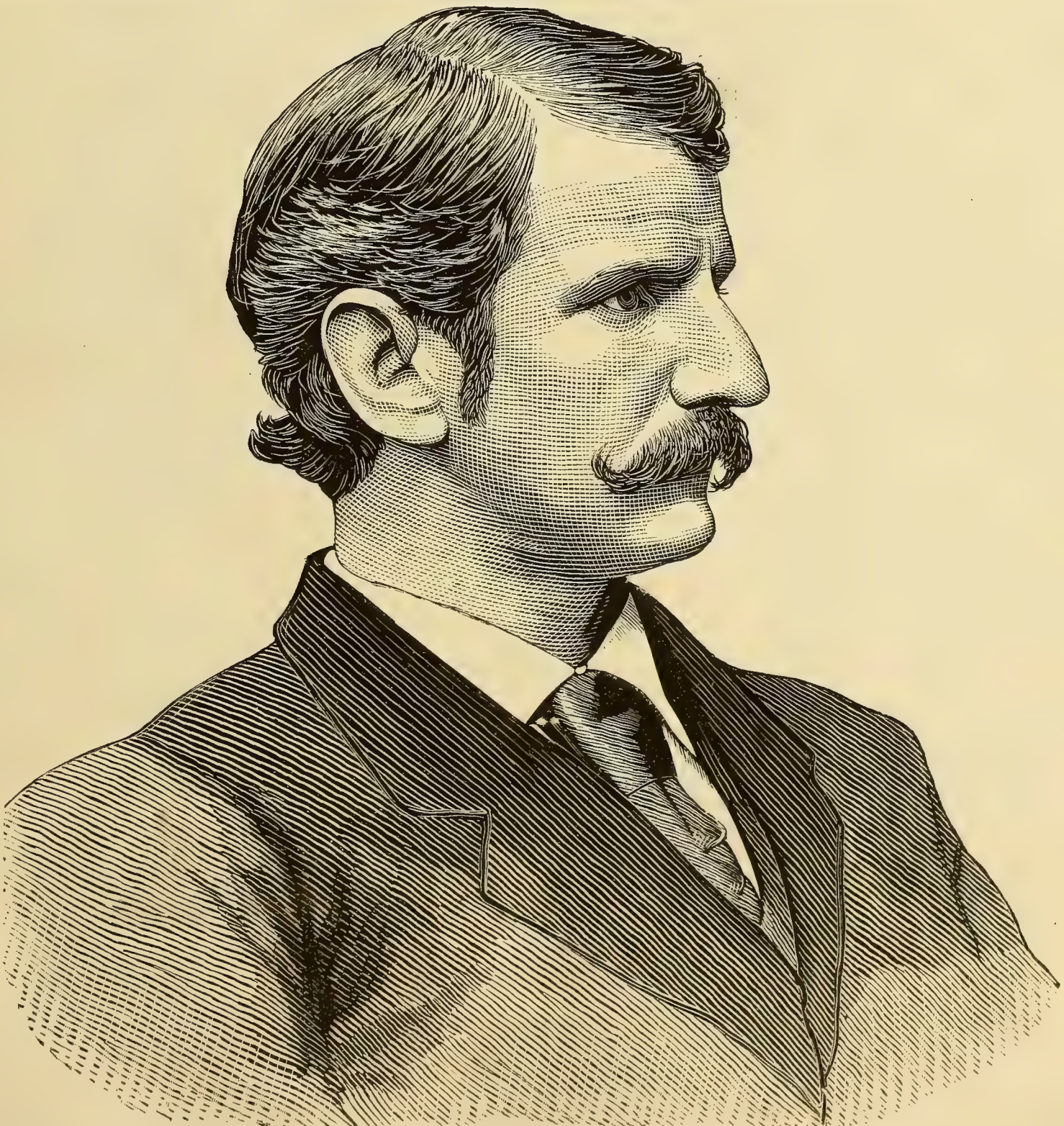




VOL. XII.—No. 18.

NEW YORK, SEPTEMBER 15, 1881.

{ ONE DOLLAR A YEAR.  
5 CENTS PER COPY.



THEODORE N. VAIL, General Manager American Bell Telephone Company.



## Our National Portrait Gallery.

## VII.

THEODORE N. VAIL, OF BOSTON.

Mr. Theodore N. Vail, the subject of our sketch to-day, needs very little introduction to the readers of THE OPERATOR.

Mr. Vail was born at Malvern, O., in 1845, and is a nephew of Alfred Vail, of Morristown, whose history is so familiar to telegraphers in connection with Professor Morse in the early days of the telegraph.

When six years of age Mr. Vail moved to Morristown, N. J., where he resided the greater portion of the time until the age of 21.

Here it was that he first acquired a knowledge of telegraphy, and in 1865 we find him employed in the service of the United States Telegraph Company. In 1867 he was an operator in the Canal street office of that company, but was afterward transferred to the Newark, N. J., office, relieving A. J. Burton.

During this period of telegraphic history it was customary for telegraphers to move from point to point, to satisfy their curiosity and increase their exchequer. Mr. Vail appears to have been no exception to the rule, for in 1868 he appears upon the scene as an operator on the Union Pacific road. His brief sojourn in this capacity at Pine Bluffs station leads us to suppose that the society of the place was not congenial to his tastes, nor the future prospects of the thriving settlement such as to encourage him in the study and practice of law, for Feb. 5, 1869, finds him entering the service of the government as mail agent between Omaha, Neb., and Ogden, Utah, at a salary of a thousand dollars per annum.

His experience in this western country would fill a book and prove as interesting to telegraphers as to his immediate friends. It is not chronicled, however, that he figured conspicuously as an Indian fighter, but his staying powers in a snow drift on the plains is a matter of note, his indomitable energy generally serving to bring him safely through in from thirty to sixty days.

After his appointment as mail agent, he performed special duty between Chicago and Iowa City, and during this time his energy and ability excited the admiration of Assistant General Superintendent Bangs, who caused him to be promoted to the position of head clerk, at a salary of fourteen hundred dollars per annum.

In 1869 Mr. Vail married Miss Emma Righter, of Newark, N. J., and settled at Omaha. His ambition seems to have been to own a home, and with the limited means at his command he purchased a lot, dug the cellar himself, and constructed a house capable of unlimited expansion. General Bangs finally transferred Mr. Vail to Washington to act in the capacity of clerk, in which position he remained for a number of years.

It is evident that in this position Mr. Vail appreciated the respect shown him by advancement, and consequently took advantage of every opportunity to familiarize himself perfectly in all the details of the Department, compiling information, statistics, etc., that proved not only valuable to the Department, but to himself.

There never existed a remarkably friendly feeling between Messrs. Vail and Bangs, and it is to the credit of Mr. Vail that he exhibited his worth and merit sufficiently by his work to secure the recognition of his services by the Assistant General Superintendent.

Recognizing Mr. Vail's remarkable energy,

General Bangs finally appointed him to the position of Assistant-General Superintendent of the Railway Mail Service, at a salary of \$1,600 per annum, and five dollars a day for traveling expenses.

At the time of this appointment the railway mail service may be said to have been in its infancy. The handling of the mails in transit was a new departure, and to Mr. Vail was assigned the task of perfecting the details of a system that should cause the more rapid forwarding and distributing of mail matter. What the introduction and perfection of such a system has done for the public is familiar to all.

The death of General Bangs caused the promotion of Mr. Vail, Feb. 4, 1876, to the position of General Superintendent of this service, which position he held until his retirement to engage in the telephone business.

In the early days of the telephone, Mr. Gardiner G. Hubbard conducted the business, and it was through his solicitation that Mr. Vail accepted the General Managership of the telephone business.

It was extremely fortunate in many ways that so capable a man was selected to systematize and develop the business, and it can always be said to the credit of Mr. Vail, that with all the trials and vicissitudes of the business at that time, and the vigorous and unscrupulous competition of the Western Union Telegraph Company, he never lost faith in the ultimate success of the enterprise.

To develop a business with such wide ramifications in which capital for a long time had no real confidence, organize and prepare a system that would admit of the expansion that the business has since proved capable of, was not the work of a moment, nor within the capacity of ordinary men. It required untiring energy, constant thought and application, and Mr. Vail proved himself equal to the task.

The perfection to which all the details of the vast business of the American Bell Telephone Company are carried is familiar to telephone people, and needs no explanation or comment here. The negotiations for the settlement of the contest between the Western Union and American Bell companies were almost wholly conducted by Mr. Vail, and required delicate handling. One can scarcely imagine the intricate and complicated nature of these negotiations, which occupied many months, and resulted finally in the acknowledgment of Professor's Bell's claims by the Western Union Company—a point that was contended for throughout the negotiations—and the undisputed control and possession of the whole telephone business by the American Bell Company.

Mr. Vail is largely interested in various telephonic enterprises, and has attained wealth and position, but nevertheless he remains the same genial, free hearted man that he was when working at the desk or smoking a clay pipe on the Union Pacific road. In appearance he is tall, well developed and shows little of the hard work he has done for the past ten years.

## The Telephone Convention.

The third convention and second annual gathering of members of the National Telephone Exchange Association was held at Congress Hall, Saratoga, N. Y., Sept. 6 and 7.

Several delegates and persons interested in the telephone business of the country had arrived as early as the preceding Saturday. The attend-

ance, though large, was somewhat smaller than had been expected.

The names of the delegates, honorary members, manufacturers and others connected with the business, present are as follows:

## REPRESENTING EXCHANGES.

Samuel Ivers, New Bedford, Mass.  
H. P. Frost, New Haven, Conn.  
Morris F. Tyler, New Haven, Conn.  
E. B. Baker, New Haven, Conn.  
Geo. L. Phillips, Boston, Mass.  
H. P. Monroe, Dunkirk, N. Y.  
F. W. Conn, Dunkirk, N. Y.  
Frank A. Newell, Bradford, Pa.  
William Winter, Rondout, N. Y.  
J. P. McKinstry, Cleveland, O.  
J. B. Speed, Louisville, Ky.  
H. W. Gifford, Louisville, Ky.  
H. W. Pope, New York.  
W. C. Stewart, St. Louis, Mo.  
E. T. Baker, Evansville, Ind.  
W. A. Jackson, Detroit, Mich.  
H. W. Leland, South Framingham, Mass.  
A. B. Uline, Albany, N. Y.  
E. S. Fassett, Albany, N. Y.  
Jervis Myers, Syracuse, N. Y.  
A. D. Swan, Lawrence, Mass.  
J. B. Tillotson, Nashua, N. H.  
A. M. Young, Waterbury, Conn.  
H. W. Spang, Reading, Pa.  
J. S. Ross, Nashville, Tenn.  
F. O. Vaille, Denver, Col.  
H. L. Storke, New York.  
Geo. G. Baker, Akron, O.  
R. H. Dwight, Pittsfield, Mass.  
G. E. Betts, Bridgeport, Conn.  
T. W. Clement, Brookline, Mass.  
C. N. Fay, Chicago, Ill.  
W. K. Morley, Bloomington, Ill.  
W. S. Reyburn, Peoria, Ill.  
W. D. Sargent, Philadelphia.  
J. C. Reilly, Philadelphia.  
J. T. McConnell, Pittsburgh, Pa.  
Henry Metzger, Pittsburgh, Pa.  
J. M. Crowley, Augusta, Ga.  
D. I. Carson, New York.  
C. E. Chinnock, New York.  
G. L. Wiley, New York.  
J. P. Davis, New York.  
H. C. Haskins, Milwaukee.  
H. H. Eldred, New York.  
W. H. Eckert, Cincinnati.  
N. W. Lillie, Boston.  
J. K. Balch, Clinton, Iowa.  
J. M. Wheeler, Toledo, O.  
Floyd L. Smith, Portsmouth, O.  
J. S. Smith, Fishkill, N. Y.  
Chas. K. Hunt, West Winsted, Conn.  
A. R. Sewall, Albany.  
A. G. Davis, Baltimore, Md.  
John Bigler, Newburgh, N. Y.  
D. S. Plume, Waterbury, Conn.

## HONORARY MEMBERS.

Eugene F. Phillips, Providence, R. I.  
W. H. Sawyer, Providence, R. I.  
Fred. S. Potter, New Bedford.  
Chas. Williams, Jr., Boston.  
Messrs. Post & Co., by E. V. Cherry and Chas. Anderson.  
The Gilliland Electric Manufacturing Co., by J. F. Gilliland.  
The Bell Telephone Co. of Canada, by C. F. Sise, Montreal.  
Geo. C. Maynard, Washington, D. C.  
Austin G. Day, by C. B. Hotchkiss, New York.  
Wm. A. Childs, New York.

## AMERICAN BELL TELEPHONE CO.

W. H. Forbes, President.  
O. E. Madden, Superintendent of Agencies.  
T. D. Lockwood, Electrician.  
C. R. Truex, T. B. Doolittle, J. M. Brown, Special agents.  
Fred Bartlett, Stenographer.

The following gentlemen were also present: J. H. Lounsbury, W. U. Manager Hartford, Ct.; W. J. Denver, W. U. Manager Springfield, Mass.; J. P. Stabler, Washington, D. C.; H. L. Shipley, New York; W. J. Johnston, of THE OPERATOR; R. W. Pope, representing the Union Electric Manufacturing Co., New York; John A. Blattan, Baltimore; F. M. Delano and J. B. Richards, Detroit, Mich.; H. A. Cole and F. W. Harrington, Boston; Geo. M. Coy, Milford, Ct.; Chas. A. Rolfe and A. H. Palmer, of the Utica



Fire Alarm Telegraph Co., Utica, N. Y.; C. E. Scribner and M. G. Kellogg, of the W. E. Manufacturing Co., Chicago, Ill.; W. Wolcott Marks, of the Bishop Gutta Percha Works, New York; D. W. Odiorne, New York; Henry M. Smith, representing the Washburn & Moen Manufacturing Co., Worcester, Mass.; Geo. H. Bliss, Pittsfield, Mass.; Frank Shaw, of the Law Telegraph Co., New York; J. H. Longstreet, New York; M. W. Goodyear, of L. G. Tillotson & Co., New York; Geo. L. Beetle and F. R. Wells, of the W. E. manufacturing Co., New York, and J. H. Bunnell, New York.

The convention was called to order at 10:30 A. M., on Tuesday, Sept. 6, by the President, Geo. L. Phillips. But three sessions in all were held, inasmuch as it became evident toward the close of the morning session on Wednesday that, by extending its length somewhat, the business of the convention could be concluded without the necessity of an afternoon session.

A call of the roll by the Secretary, Mr. Morris F. Tyler, of New Haven, showed a fair but not extremely large attendance.

The report of the Treasurer, Charles L. Mitchell, of New Haven, was read by the Secretary, giving in detail an account of the receipts and disbursements since the last report. The total receipts were \$1,524.85; disbursements, \$743.37; leaving a balance in the Treasury of \$781.48.

The reports of the Secretary and Executive Committee were then read and approved, after which a salary of \$300 was voted to the Secretary for his efficient services.

The names of Henry W. Pope and H. L. Shippy, the latter representing the well-known wire firm of the John A. Roebling's Sons Co., were presented for honorary membership, both gentlemen having paid the regular fee of \$25. They were unanimously accepted.

Mr. H. W. Pope stated that before the work of the convention was proceeded with, he desired to explain the apparent incongruity of the report of the committee on subterranean lines at the last convention, and the remarks made by Mr. Patterson thereon, the remarks referred to having in some measure contradicted the statements made by the report. He explained this by saying that the report of the committee was based upon information received immediately prior to the date of the convention, while Mr. Patterson's information was received at an earlier date.

The choice of officers for the ensuing year resulted in the unanimous re-election of George L. Phillips, of Boston, as President. W. H. Eckert, of Cincinnati, was elected Vice-President by a majority of 15. The Secretary, Morris F. Tyler, and the Treasurer, Chas. L. Mitchell, both of New Haven, were re-elected.

W. D. Sargent, of Philadelphia, was elected a member for 3 years of the Advisory Committee; and Messrs. E. J. Hall, Jr., of Buffalo, Henry Metzger, of Pittsburgh, C. N. Fay, of Chicago, and G. L. Wiley, of New York, were elected by acclamation as members of the Executive Committee.

A recess was then taken until 3 P. M.

The afternoon session being called to order, the petition of Marcus Marx for honorary membership was laid before the Association, and unanimously rejected.

Mr. Marx, it will be remembered, is connected with the People's Telephone Company, the corporation which is at present employed in the sponsorship of the claim of Daniel Drawbaugh to the inventorship of the telephone.

Reports of standing committees being called for, Mr. Tyler, of New Haven, reported on behalf of the Committee on Laws, of which he was Chairman. His remarks were generally of the following tenor:

That the subject given to this committee for consideration referred properly to three divisions, namely: the position of the exchanges with reference to the American Bell Telephone Co.; secondly, their position in relation with subscribers, and thirdly, their position in reference to non-subscribers.

After remarking that there should be no danger of any interruption of harmonious relations

under the first head, nor, in the case of properly managed companies, under the second, the third demanded careful consideration. It was possible that much legislation would be had upon this point. The only legislation in Connecticut, so far, had been at the instance of the telephone companies themselves, and was to the effect that the occupation by permission of housetops should not cause a prescriptive right to permanent occupation.

The committee suggested the appointment of a special committee on legislation. It was likely that in the near future some attempt would be made to tax telephone companies to an unwarrantable extent, and some action should be taken on that probability. The committee apprehended that many important questions would sooner or later arise; among others the one whether the companies were bound to furnish facilities to whoever calls for them. He cited the case of the Rapid Telephone Company at Bridgeport, who, upon being denied the use of a telephone, by virtue of the Bell contract with the Western Union, brought suit against the Connecticut Telephone Company, to compel them to furnish a telephone. The speaker was under the impression that the position of the American Bell Telephone Company was good and could be maintained.

The committee thought there was too much tendency to class telephone companies with telegraph companies, and legislate accordingly.

Mr. Hall, of Buffalo, thought it was desirable that telephone and telegraph companies should be considered as similar organizations; that his and other companies had obtained advantages from being so considered.

Mr. Tyler explained that the committee had no objection to taking as much advantage of the telegraph laws as possible; it was only when they had an adverse action to the telephone companies that the classification was deprecated.

Mr. Maynard inquired whether acts criminal in themselves were equally so in law if transacted by telephone, and whether the party committing such acts could be held equally responsible.

Mr. Fay instanced a case in Chicago, where certain parties represented themselves to be others and ordered goods, the goods being actually delivered. In this case the defrauded persons at first sought to hold the telephone company responsible; the company contended that any firm delivering goods without knowing to whom they were sent deserved to lose them.

Mr. Maynard, of Washington, also wished to know what punishment could be enforced in such a case or in a case where the lines were used for profane or foul language.

The President said that "Chief Justice Ecker, of Cincinnati, in such a contingency takes out the instrument."

Mr. Fay, of Chicago, stated that the city ordinance recently passed in Chicago, prohibiting the further construction of poles, housetop fixtures, or aerial lines, and providing that after May, 1883, all wires should be put underground, was being enforced, much to the annoyance of telegraph and telephone companies.

The report of the Committee on Central Office systems being called for, Mr. Fay requested a respite until the next session, as he had, since his arrival, obtained further information which he wished to incorporate.

No report was received from the Committee on Line Construction and Maintenance.

Mr. H. W. Pope, of New York, was called upon for a report from the Cable Committee, and said that Mr. C. H. Haskins, of Milwaukee, was the gentleman to look to.

Mr. Pope presented an able and exhaustive report upon subterranean lines, covering the important features of that branch of electrical engineering.

The committee reported that very little progress had been made since the previous meeting of the convention, but that the public authorities in several of the larger cities, notably Chicago, had adopted laws and ordinances tending to compel the construction of subterranean lines. The report contended that the enforcement of such laws and ordinances would result in bankrupting the telephone companies.

In arguing the practicability of subterranean construction, as affecting the telephone, the report says:

"It is questionable whether a universal subter-

anean system will ever be perfected that will accommodate alike, and without interference, the various classes of electric conductors to be encountered in cities of upward of 100,000 inhabitants, and it is apparent that whatever system is introduced must be universal, accommodating the wires of all corporations."

The great expense, together with the difficulties to be overcome in subterranean construction, suggest to the committee that aerial systems of cables could be utilized to advantage.

The general introduction of aerial cables as a temporary expedient opens up the question as to the feasibility of a similar universal method of carrying wires that is practical, economical and convenient. If universal, few streets need be encumbered, and with light ornamental supports in combination, for example, with street lights, it is not probable that serious objection would be offered, inasmuch as it would be a radical improvement upon the present unsightly structures.

We have seen an elevated railroad system adopted and constructed in preference to all other plans suggested, because of the very same advantages it has over either underground or viaduct roads that the aerial telegraph has over the subterranean, and because capital could not at the time be enlisted in an enterprise so fraught with difficulties.

None of the Elevated wire ways patented or suggested, however, seem to contain all the advantages necessary. With a light and ornamental support, the requirements of the public could be satisfied and the introduction of subterranean lines obviated entirely or confined wholly to important trunk routes.

The only two improvements for subterranean construction submitted by the Committee as worthy of note were the "Delany Button" and "Delaney Lead Cables," both of which were described and commented upon at length. The former consists of naked copper wires passing through elliptical glass buttons—the buttons standing on edge and being packed tight together, the whole forming a flexible cable which can be easily passed through a pipe or conduit. The latter cable is of a flat form, made of lead, with wires occupying the same plane. This cable has an advantage in that it surely overcomes induction.

The aerial system of Mr. Geo. B. Scott was explained at length, and in view of the fact that the committee intimate a preference for aerial systems, it is worthy of consideration by telephone companies. Such a system is now being constructed at Boston on a limited scale.

The committee, in conclusion, cautioned members of the association of the danger of too strongly advocating subterranean construction, and wisely impressed upon them the fact that whatever is done above or below ground should be permanent and capable of expansion, and as to cables for every purpose, permanent and reliable insulation is the most desirable and economical.

No discussion following this report, the President called upon Mr. H. H. Eldred to give an account of his observations in telephone circles in Europe. Mr. Eldred gave some interesting statistics concerning the progress of the telephone, and of telephone exchange systems in Europe, recapitulating the recent war between the government of England and the telephone companies.

He spoke of the "Hunning transmitter" as one of great merit, the right for which in the United States, he said, had lately been acquired by the American Bell Telephone Company. He described in detail the system in use at Paris, where the wires are all underground, all metallic circuits, and each having but one station. He said that the exchange at Paris was the best working and the best managed one he had seen. He also gave an interesting résumé of the progress and prospects of telephony throughout the world. When describing the Belgian exchanges, he said that phosphor-bronze wire was much used there.

This elicited some discussion, inasmuch as phosphor-bronze in this country, weight for weight, has nearly the same electrical resistance as iron, while it is much more expensive, and would therefore necessarily be used in smaller sizes.

An adjournment at this point was voted until the morrow, after the election of Messrs. Beach and Hunt, of West Winsted, Conn., to membership.



By means of a Western Union wire, the Albany Telephone Exchange was connected to Saratoga, and many conversations between Albany and Saratoga were held in the course of the day.

The session of Wednesday, Sept. 7, opened at 10:30 A. M.

An excuse was received from Mr. Engle regretting his absence, which was caused by pressing business, and promising to report fully upon the subject of fire alarms next year.

Mr. Fay, of Chicago, presented and read a copious report on Central Office Systems and Apparatus, which was well received.

He said he had received returns from but twenty-two companies, but hoped for much fuller and more complete reports next year.

In view of this expressed hope, he explained in detail the various subjects embraced in the forms sent out by the committee. These were: System employed; kind of switch-board used; maker of switch-board; space occupied by apparatus on floor; expense of fitting offices; number of wires; number of stations per wire; number of operators employed; average number of calls per day; average pay for operators, and average speed of connections. It was ascertained from the reports received that more cord switch-boards were in use than plug switch-boards, but that more wires were connected to plug switches than to cord switches, showing that the larger exchanges favored the plug switch. The majority of wires in use by the exchanges making returns have more than one station connected on them.

The speaker then read a list showing the number of subscribers of each exchange reporting. The four exchanges heading the list were, respectively, New York, Chicago, Cincinnati and Philadelphia. The three exchanges receiving on an average the greatest number of calls were, first, Chicago; second, Cincinnati; third, New York. The average cost of connection was highest in Buffalo, Chicago and Cincinnati.

Of the exchanges reporting upon the speed of connection, Clinton and Lyons, Iowa, came first, claiming an average time of two and two-tenths seconds, while New York came last, showing an average of 60 seconds.

Mr. Balch, of Clinton, explained that the wonderful speed claimed by his exchanges was accounted for by the fact that upon receiving a call his exchanges were in the habit of connecting the two lines together, and permitting them to ring up each other.

The average time required in making connections of the twenty-two exchanges reporting was twenty-six and eight-tenths seconds.

Six exchanges were operating individual bells, and five working upon a listening system. Three exchanges preferred male operators; eleven preferred female operators.

Mr. Pope thought if some uniform rule were adopted in gathering statistics, the information would be more comprehensive and valuable.

Mr. Fay said the expense incurred by exchanges in obtaining accurate information was very considerable; he commented upon different methods of calling, and to some extent advocated the method of putting two together on the switch-board and ringing the two simultaneously.

The Committee on Cables not being present, Mr. Sargent, of Philadelphia, reported in behalf of the Committee on Electrical Disturbances.

Mr. Sargent read a most careful, exhaustive and able report, comprising statements of the cause and effects of many of the troubles experienced by telephonic electricians. These were static and dynamic induction, leakage from one wire to another, earth and atmospheric currents, defective insulation, bad joints, and defective groundwires. He canvassed the recent discoveries of the French electrician GaiFFE, that the mere vibration of one wire sent induced currents into other wires near it. He explained the theory of the anti-induction cable, discussed interference caused by electric light wires, troubles caused by lightning, quoting from the recent article in THE OPERATOR upon that subject, and showed how many of these troubles could be remedied.

He also spoke of the electrical properties of phosphor-bronze wire, but without in manner advocating its use, and commended the porcelain insulator.

Mr. Pope remarked that to many of the delegates the only porcelain insulator known was

the ordinary knob, and he thought it might be supposed that was the insulator alluded to by Mr. Sargent, whereas, as an insulator, it was without great value.

Mr. Sargent said the insulator he spoke of and commended was the large insulator which is universally used in Europe.

Mr. H. C. Haskins, of Milwaukee, advocated a new compound wire, made at Ansonia, Conn. It consists of a steel core, having a thick layer of copper electrically deposited on it. He claimed for it lightness, high conductivity, and great durability.

Mr. Lockwood, of Boston, discussed at some length the report of Mr. Sargent, entering into an explanation of the terms static and dynamic induction, and showing how the telephone was affected by both troubles.

The transmitters furnished to exchanges were spoken of by Mr. Hall, who thought that they were not as good as the older ones. He thought the carbon buttons were imperfect.

Mr. R. M. Bailey, of Tyrone, Pa., said that a poor transmitter, it had been his experience, was sometimes improved by reversing the battery.

Mr. Sargent said he also had noticed that the transmitters were not so good as they had been, and ascribed the trouble to the use of a lighter platinum spring. After some further discussion upon this subject by Messrs. Wiley, Chinnock, Lockwood, Maynard, Gifford and Ross. Mr. Maynard was called upon for a report of the Committee on Auxiliary Systems, and reported at length, showing what had been done in various cities in that direction.

The Committee upon a Telephone Journal and Exchange Statistics failed to report.

In regard to the Committee on Rates, Mr. Hall, of Buffalo, thought it not necessary to make a full report until next meeting.

Mr. H. C. Haskins reported that the Milwaukee exchange had adopted a modification of the Buffalo toll system.

Mr. Hall recapitulated briefly his toll system experience, adding that since its adoption the Buffalo exchange had made a slight increase in subscribers.

It was voted that the next annual meeting should be held in Boston.

Several resolutions, amending the constitution and conferring powers upon the President to appoint honorary members upon committees, were proposed and voted upon so far as the constitution permitted, others being laid over until the next meeting.

Mr. Gifford offered a resolution, empowering the committee on rates to collect within thirty days from exchanges a schedule of rates charged, a copy of the information thus procured to be sent to each member of the association. Carried.

The number of committees was reduced to eight.

The association then adjourned to meet in Boston on the Tuesday following the first Monday in September, 1882.

During the afternoon it was ascertained that Professor A. G. Bell was staying at the Grand Union Hotel, he having that day arrived. He was introduced to many of the delegates and expressed great pleasure at being present upon such an occasion.

Notwithstanding the intense heat, and that the acoustic properties of the hall were not what they might have been, the proceedings of the convention were most interesting, and a pleasant and profitable time was passed by all who attended.

#### A Delegate Who Was Late.

To the Editor of The Operator:

SIR: I am thus far on my way home from Saratoga, where I went with the expectation of feasting my optics upon a very fine display of apparatus telephonic, and storing my "cable house" with information that would inform. From a printed postal received from the Utica Fire Alarm Telegraph Company, I got the impression that the exhibition opened on the 6th and continued four days—6th, 7th, 8th and 9th inclusive—so I consumed two days along the route, and arrived at Congress Hall bright and early Thursday morning, Sept. 8. Here I learned, greatly to my disappointment, that the "hello-ers" had beaten the Arabs all hollow in packing up quietly and getting away quick. I was not the only one that was disappointed, for many others arrived late Wednesday evening,

and quite a number came in on Thursday. It strikes me that it would be a pious plan for some one to know how long these exhibitions would be continued, and so state it that those desiring to attend might govern themselves accordingly—and not get left.

I lay over a train at Troy, and found a nicely arranged exchange, with the Utica circular jack in use. The "Snell" was one of the kinds that I particularly wanted to examine; so I dropped off at Springfield and took a peep at the three 50-line tables in use there. They are wholly composed of the "Snell jacks," drops, etc., and all metal work gold plated. Mr. French, the chief operator, is dead in love with the system, and will not be seeking for a divorce very soon.

Can't say that I should cry to sit up nights (or day time, either) with the system in use here (Worcester)—the old Western Union switch, with many odd and more or less useful attachments spread around here and there, which give it the appearance of too much of a muchness. Mr. Wilson, the gentlemanly chief operator, shows it up so nicely, however, that one would almost believe it the only system worth speaking of. Mr. Wilson, by the way, was one of the disappointed ones at Saratoga—arrived too late.

Washburn and Moen have done much to bring Worcester before the electric arena, but when it becomes generally known that it is the birth place of the "Wiggle-wag," then she will be a famous burgh. Have you ever seen the "Wiggle-wag?"

Here I also found that rare old genius and electrician, Prof. E. J. Leland, and what he can't show you in the electric line is not worth seeing—in fact, he has got more "fixin's" to the square inch up in his rooms, than I ever did see, and he is such a jolly fellow that you'll be sure to miss the train if you get in his company.

Well, as it is nearly car time, and as I want to reach the "Hub" to spend Sunday, I must cut it right short. Telephonically yours, N.

WORCESTER, Mass., Sept. 10, 1881.

#### The Telephone and the Electric Light at the Paris Exhibition.

[From The Operator's Special Correspondent.]

The exhibition was not really opened in its entirety until Saturday, Aug. 27, when the Palais de l'Industrie was thrown open to the public for the first time in the evening. On the preceding evening another "special occasion" was got up for the journalists of Paris, and every one, exhibitors and all, was excluded, in order that proper honors might be shown the members of the press. No ceremony was undertaken, the visitors merely walking about the place inspecting the different objects of interest and commenting upon the qualities of the different electric lights. When they had satisfied themselves that the show was a big one, they quietly walked out and went home. On the next evening, Saturday, the public was admitted, and in a very short time after 8 o'clock, the opening hour, the building was crowded. All day Sunday and Sunday evening the crowd was greater, if possible, than on the preceding day.

An effort has been made by the International Sunday Observance Society to have the English speaking exhibitors close up on Sunday. It is hard to say whether their honest efforts had any weight or not, but to the credit of the English and Americans be it said that nearly all of them observe the day, only those keeping open who use or furnish steam power, and have lights on exhibition.

Of the twenty-five or thirty different kinds of lamps here it is as yet almost impossible to say which is the best. The Brush stands high in favor among the arc lights, but each of the incandescent systems, Edison's, Swan's, Maxim's and Fox Lane's, has its particular friends. As far as the light-giving properties and steadiness of the different lamps are concerned, I cannot see but that one is about as good as another. The principal point is, "What do they cost?" and that remains for the



jury to decide. The jurors have already been practically appointed, and will begin their duties at about the same time as the Congress, on the 15th inst. The United States will have seven representatives, consisting probably of members of the Commission. The entire jury will consist of about 150 members.

The American Commissioners received a note a few days ago from the French Commissioners, saying that the historical portion of the exhibition was likely to prove a failure, because so few countries had sent their historical apparatus. The French authorities requested that an effort be made, while there was still time, to have American inventors send their "first attempts" along as soon as possible. It is understood that among the questions to be decided by the Congress is that of the priority of invention of the telephone, and this historical material is to be used as an aid in settling that question. Professor Gray has sent for his musical telephone and other of his earlier apparatus, and Professor Bell has been requested to send on his earlier inventions also.

Dolbear's new telephone is on exhibit in the American section, and is a wonder of simplicity. Every person who has had much to do with condensers has noticed that peculiar "thud" sound when they are charged or discharged. The Dolbear telephone is nothing more than a small condenser, consisting of two tin plates placed a little distance apart so as to make an air dielectric. Any transmitter can be used, although Professor Dolbear has his own particular pattern. Dr. Hertz showed me his new telephone the other day in his laboratory; it is not on exhibition here. The receiver is merely a small condenser, made in the ordinary manner, with tin foil and paraffine paper. It is constructed in the form of a hand mirror; in fact, some of the models are finished with a mirror in the back. Except that they have two binding screws to make connections with the two series of sheets in the condenser, they could not be distinguished from the well-known toilet article. When we see such results from so common and simple devices, we cannot but wonder that the discoveries were never made before.

In my last letter I said that Edison was going to light up some concert halls in the Champs Elysées, in addition to the grand staircase and his own room. As he would have to pay duty on everything used outside of the exhibition building proper, it has been decided to confine his exhibit to the inside. Unfortunately, his exhibit is still in a very backward state. His large generator that we have heard so much about has not arrived, and will require some days to place in position when it does reach Paris. In the meantime, he is renting motor and generator power sufficient to run his lamps. It is often remarked that where other inventors have improved lamps, or generators or other portions of a system, Edison has an entire system of his own from the generators up to the lamps.

The telephonic concerts have been commenced with great success. In a heavily tapestried room off the gallery are a number of Ader telephones, to which the public is allowed access on the payment of a small supplementary fee, and given the use of two telephone receivers for a few minutes. The conductors are laid underground to the Grand Opéra, and the transmitters are there placed just beside the prompter's box. The effect is wonderful. On Friday evening I was favored with a few minutes of "Robert le Diable," which was then being performed. The voice of M. Vilaret could be heard with almost as great distinctness as in the Opera-House itself, and the same was the case with the orchestra, while even the plaudits of the *claque* were perfectly audible and distinguishable. The distance indeed, between the two localities was practically suppressed, and there seems no reason why at some not distant date people may not be able to enjoy the opera at reduced prices in their own homes.

While there are a great many things of an electrical nature here that are curious, there are also a great many others that are called electrical in which electricity plays a very small part indeed. There is, for instance, an electrical incubator, by which one would suppose that chickens were hatched by electricity in some way, but electricity has nothing to do with it except to ring a bell when the thermometer placed inside makes a connection that indicates that the tem-

perature is either too high or too low for the welfare of the coming chickens. There is also a glass house containing several varieties of flowers in pots, and having one-half painted black, indicating seemingly, that there may be found a process for developing flowers by the electric light only. But the whole thing is only a scheme by a glass-house maker to advertise his conservatory.

The exhibit of American telegraph instruments is extremely meagre. Latimer Clark, Muirhead & Co., as sole European agents, have a little case of instruments made by the Western Electric Company, and they are the only things on exhibition as specimens of American workmanship. The English and Germans are far ahead of us in the enterprise shown in this respect, although what few American instruments there are here call for unbounded praise on account of their neatness and usefulness. The American key excites much surprise in the foreigners, the Germans, especially. They don't like it. They say it is not large enough, and when a person uses it he has nothing tangible in his hand to show that he is working. You know a German key consists of a straight bar of brass about six inches long and half an inch square, with a knob of hard rubber stuck on near the end so large that the operator can get hold of it with his whole hand as if he were working a pump handle. Well, when we remember that a speed of 20 words a minute is considered good average work in Europe, perhaps their key is good enough for them for the present.

#### The Jury of the Electric Exhibition.

A cable dispatch from Paris says the apportionment of the numbers of the members of the jury of the International Electric Exhibition is finally settled as follows: France, 75; Belgium, 11; Great Britain, Germany and Italy, 10 each; America, 7; Sweden, 5; Switzerland, 4; Spain, Norway and Holland, 3 each; Hungary, Denmark and Japan, 1 each. People now begin to appreciate the difficulties the jury will have to contend with. Some anxiety is expressed in regard to their appointment. Mechanical as well as electrical experts are required. There is some fear that if this work is not begun immediately it cannot be done satisfactorily. Even if a number of incandescent filament lamps be started now and kept working until November, when the exhibition closes, it is improbable that the durability of these lamps will be known. M. Rysselberghe, director of the Brussels Observatory, lectured Sept. 9 at the Electrical Exhibition in regard to apparatus for registering meteorological changes. He specially explained the widespread organization of the United States Signal Service Bureau. His audience was conducted through the United States Signal Office exhibit.

#### The Telegraphic Situation.

The chilling blasts of the public press which have been howling all around the Western Union for a month past, have had the effect of improving its service, while the salary scalpers, who crawled into their holes at the first alarm, appear now to have drawn the holes in after them. The management squirmed a good deal about the expense of creating extra facilities at Long Branch to accommodate the press and public during President Garfield's sickness, and for a time the service was execrable; but the sight of an improvised "pony express" carrying press dispatches in the style of 50 years ago, and of carrier pigeons flying in all directions, shamed them into activity, and some of the necessary work was done a week after the President arrived, instead of a week in advance of his arrival. The service there is not yet all that it should be, if they had anticipated the demands of the emergency instead of waiting to see what the emergency would demand; but they are fairly good and the work is being done as well as the finest operators in the world can do it with the present facilities.

On the 26th ultimo the Western Union Company issued the following order, which, if sincere,

is indicative of at least good feeling on its part, and which we are sure will be reciprocated by the operators:

#### To all Superintendents:

It is hardly necessary to call your attention to the continued anxiety in the public mind for the latest news from Washington, and to the desirability of having all offices manned to-morrow. Our employés have nobly responded to the demands of the situation, and I am sure will not be unwilling to undergo the further strain upon this trying occasion. Though the company makes no extra charge for the extraordinary bulletin service it is rendering, the employés should be paid for all extra time and commended for their devotion.

D. H. BATES,  
Assistant to the General Manager.

Smarting under the severe criticism of the press, the Western Union manager at Boston was recently rash enough to call personally upon the *Commercial Bulletin*—that paper and the *Shipping List*, in that city, having been most prominent in demanding better telegraphic service for their merchants. He received for his pains about a column of proofs of the Western Union's bad service, in the shape of letters from prominent business firms. The *Bulletin* (September 3) plainly tells this manager that "almost every complaint made in the *Bulletin* has been made again and again at the office of the company, the manager to the contrary notwithstanding. We have before us the names of a dozen merchants who have gone personally to the company's office repeatedly during the last year and inquired why their dispatches to Chicago were continually delayed, and also why delays in delivery should exist here in the city. It may be that all these complaints have not reached the manager; if so, we respectfully suggest that he select subordinates who know enough to report matters of so much importance to their executive officer. One gentleman, in addition to complaining in person at the office, has written three times to the manager, but has received no notice of either communication."

The *Bulletin* then substantiates its charges by letters from the leading merchants. One man says, among other things: "I received a letter a few days ago saying: 'We did not answer your telegram of such a date, supposing you were on your way to Chicago, it being dated from Buffalo.' Again, a dispatch was sent me from Chicago Aug. 19, about 12 o'clock, reaching my office 4:30 that afternoon; one from the same party started an hour earlier reached me the next morning at 8:25. It has become so uncertain when a dispatch will reach its destination, that I have about given up sending them. Another thing that you have not spoken of: Is there any reason why it need take from 30 minutes to an hour and a quarter for a dispatch to be delivered at my office, which is within five minutes' walk of the main office?"

Another man says: "These delays have greatly restricted our business, besides costing us hundreds of dollars at various times during the past year. For some weeks previous to the publication of your article, the time consumed in getting our telegrams to our office (three minutes' walk from the main office) has been twenty-five to fifty-five minutes after the receipt of the messages in Boston. We have occasional instances where our messages are not delivered at their destination till the day following the sending of same, although they were started in season to have secured replies by day message, had the service been only moderately efficient."

Another merchant goes to the root of the question by saying: "Boston merchants should have an independent line to the West, and if the Western Union will not provide it, let us look elsewhere, and promptly, too."

Still another one intimates that the management has some little "private" arrangement as follows:

"Here is a case in point: Yesterday I was very anxious to get a return dispatch. I remarked that I disliked to send mine, fearing I should have to wait too long. 'I'll get you an answer inside of twenty minutes,' said a friend at my elbow. My friend and I sent duplicate dispatches. He received an answer in twenty-five minutes; I received mine four hours and a



half later. This is regularly done, and I am prepared to prove it."

All this is to be found in the *Boston Commercial Bulletin* of Sept. 3. That enterprising paper seems, however, to be mystified as to the cause of all this trouble.

The New York *Herald* seems to have started a kind of a go-as-you-please contest among the anti-monopolists. "J. S. B." first writes to the *Herald* of his grievances with regard to bad service over the Western Union lines. Following him "A. R." writes as follows:

I can beat "J. S. B." I sent a message from Jersey City at ten minutes to nine A. M. to Wurtsborough, Sullivan County. It got there at a quarter-past three P. M. I was there by train three hours ahead of it. The above can be proved by reference to the dispatch.

Not to be outdone, "E. L. S." writes to the *Herald* as follows:

"A. R." has beaten "J. S. B." and I think the following beats both: I sent a message of sympathy to Harlem the 5th of August last from the Western Union's office on Broad street, and it has not been delivered yet. On calling a week later, I was told I could repeat it.

Making due allowance for the usual number of crabbed old bachelors and cranks generally who are brought to the surface during these discussions there seems still some grounds for their complaints when we compare them with those made in other cities between Boston and Kansas City.

None of our esteemed contemporaries have, however, attempted to go to the bottom of the question. They have not stated that the trouble is caused principally by the company's failure to persuade its men to work longer hours than usual for less money than formerly; and that, in consequence, those good men who have not left its service, remain only to do perfunctory work, and as little even of that as possible.

The past few days have developed the fact that the Mutual Union, American Rapid, Canadian Mutual and Baltimore & Ohio systems of telegraph have entered into a combination by which some 50,000 miles of wire will be placed under one management. The Baltimore & Ohio, it is stated, has been in communication with the Mutual Union Company, which covers 35,000 miles of itself, and has six wires in Baltimore and twelve from New York to Boston, and also with the American Rapid, which has three or four wires between New York and Washington, with the view to combining. The Canadian Mutual may enter the pool also, as the Baltimore & Ohio, although it has a good commercial business, is in vital need of an outlet, and a combination with these three lines would be a great advantage. The Mutual Union is running its lines west, and the Baltimore & Ohio has many points in that direction to cover. President Garrett has already announced his intention, emphatically and definitely, to fight the Western Union. The Baltimore & Ohio line now covers 10,000 miles, and there is nothing so much required as several outside lines to carry off the business being done by the Baltimore & Ohio; and the latter, too, will be in a great measure helpful to the other three lines, so that the combination would be of advantage to all concerned. Speaking of the influence which the combination is likely to exert on the Western Union, Mr Stewart says the effect upon it would be noticeable, for if it were so when the company was capitalized at \$40,000,000 it will be more so now that its capital is \$80,000,000. By the terms of the contract the Mutual Union Company is to have complete control of all the wires, paying therefor, in addition to a certain stated sum as rental, a percentage upon the business transacted over the lines. It is also stipulated that the telegraph people transmit all messages pertaining to the business of the railroad. Dispatches from the officials of the road to their subordinates, in reference to the running of trains, and all messages pertaining to the management of the road, are to have precedence over outside business. The expenses attendant upon keeping the telegraph property in repair are to be borne jointly by the telegraph company and the railroad company. The contract is, in its essential features, similar to the one that formerly existed between the Baltimore & Ohio railroad managers and the American Union Telegraph Company. When the American Union was consolidated with the Western Union and the Atlantic & Pacific companies, it became

necessary for the railroad managers to make some new arrangement, and hence the contract with the Mutual Union people has been agreed upon. It is not probable that there will be any important changes among the employes of the telegraph line. The lease is for five years, with a privilege of renewal for a like term.

The Mutual Union, notwithstanding this contract, has wisely decided not to open for general business until the middle of October or the first of November, although the work of building the lines is practically completed now in a large part of this district. The Board of Directors have resolved not to open any of their offices for public business until about a few of the least important offices are in a condition to receive and transmit messages.

The telegraph system of the Baltimore & Ohio consists of four lines of wire, in good condition, extending over the whole length of the road—435 miles. When the Mutual Union Company is opened for business its lines will extend from New York to Washington City, thence to Cumberland, Cincinnati and Pittsburg, and another division will connect New York with Philadelphia, Bethlehem, Easton, Allentown and other cities in Pennsylvania. The eastern division will run from this city to Albany, Saratoga, Troy, Boston, Pittsfield, Springfield, and thence along the New England coast to Maine, covering Providence, Newport, Fall River, Taunton, etc. In all this territory men are at work completing lines. There will be no wires south of Washington city for the present.

Since our last issue, a charter has been granted in Canada to the Canada Mutual Telegraph Company, under the Joint Stock Companies act. The organization promises to enter the field as a vigorous rival to the recently-amalgamated Montreal Dominion companies. The capital of the new company is \$1,000,000, and, from all that can be learned, it is the intention to press forward the construction of a line as far as possible this fall, and complete a system which will extend to every part of the Dominion as soon as the frost is out of the ground next spring. It is understood that the capital of the new enterprise is all subscribed, the first installment is paid in, and that arrangements have been made with the new Mutual Union Company of this city, for an interchange of business.

Mr. Keene's Postal Telegraph is still talking, and of course getting all the free advertising it can, but we see no evidences of solid work, and, in fact, expect little this fall.

The Western Union has, in consideration of \$120,000, secured from Wm. Callow, of Baltimore, his interest in all the telegraph lines and franchises formerly belonging to the Bankers' and Brokers' Telegraph Company, including five wires from New York to Philadelphia and three from Philadelphia to Washington. The Western Union had leased these lines since 1871. The transfer was recorded on the 6th inst., the instrument being dated Sept. 5, 1881. On the previous Monday a similar instrument, by which John Howard Wells, of this city, transferred to the corporation named his interest in the same property for a like amount, was recorded. The lines of the company were transferred to Mr. Wells by the trustees in 1871 and he leased them to the Western Union Company.

"The Brotherhood of Telegraphers" has become strong enough to call forth secret letters from mousing officials to various local managers inquiring if "the Brotherhood were worth while looking after," and "how it stands." A majority of the replies state that "it is entirely harmless, so long as the consolidated company treats its men like the late American Union did, but"—it is that "but" that makes them sick.

It is said that the wires of the Mutual Union Telegraph Company will be open for business to all important cities about the 1st of November. Mr. Gamble, late General Superintendent of the Western Union lines on the Pacific coast, has resigned, and accepted the position of general manager of the new company. The lines are being extended to the Southern cities, and it is said that by the 1st of November the general office will probably be connected with four-fifths of the great commercial towns in the country.

The main office of the Mutual Union Telegraph Co. in this city will be in the London, Liverpool & Globe building, corner of Pine and William streets. As soon as this office can be fitted up, probably about Nov. 1, the company's lines will be opened for business.

## More Press Criticism of the Western Union.

The following extracts from recent issues of several different New York daily papers show how business was handled during the recent rush at Long Branch.

The principal cause of all the complaint is given by a well-known telegrapher of this city as follows:

"Of course, it is unnecessary to inform you that four-fifths of the operators here, as well as elsewhere, are mere students. The good men are leaving the business on account of the low salaries paid by the Western Union."

An intelligent correspondent at 195 Broadway, says:

"X has been trying to reorganize this office and Y the Chicago office. They cannot do it, simply because the force is about 50 below what it should be. I understand that X has recommended an increase of 40 operators in this office."

"The underlying trouble is that when they get good men they, the company, will not pay them anything but starvation wages, and they leave the first opportunity. Business is not transacted now-a-days, it is simply butchered."

"Operators are put on first-class wires and business who have not yet acquired the rudiments of the Queen's English."

## FAILURE OF THE TELEGRAPH SYSTEM AT LONG BRANCH.

[Commercial, Tuesday, Sept. 6.]

The utter failure of the telegraph authorities at Long Branch to make sufficient provision for such an occasion as that presented to-day, is the only excuse that can be advanced for the inadequate dispatches in our later editions. The *Commercial* had made provision for full and complete reports of the President's arrival at Elberon, but when the telegraph company failed, all plans were futile.

[Commercial, Wednesday, Sept. 7.]

The wretched handling of press dispatches at Long Branch yesterday by the telegraph company is almost without precedent. There seems to be no excuse whatever for the mismanagement and bungling. Common sense would seem to have dictated that the wires should be placed in the most accessible spot, where they would prove of the utmost service to the public. Nothing of this kind was done. No effort apparently was made to please the public. Correspondents were forced not only to employ their own messengers to carry copy to the West End Hotel, a mile and a half away, whence it was carried to the main office at East Long Branch, another mile and a half away, but to see dispatches of private individuals given precedence over public news under their very eyes. At the West End, Mr. Casey, the popular manager, had his hands full all day long, and for all he worked like a beaver and displayed industry and intelligence that won the admiration of all who met him, at times he was taxed to the utmost to get off his dispatches to the main office in time to please all. It was not till late last evening that all the additional wires were in position. If the same energy and enterprise had been exercised in the telegraph line as in the railway not a complaint could be made. But Mr. Stearns was up all night to finish his great work, and he finished it; and when the time came the President's train passed over the 1,100 yards of railway that was constructed in just sixteen hours. Foresight, energy, intelligence, a willingness to accommodate and a love for labor were here manifest. If Superintendent Brown had been as willing to please the public as Mr. Stearns the President, the warmest praise would now be accorded him, in place of severe condemnation. In this age of progression it is the man who anticipates the emergencies who succeeds and gains credit, not the man who waits to see what the emergency is going to be like, and then trims his sails accordingly.

## FAILURE OF THE TELEGRAPH SERVICE.

[Post, Tuesday, Sept. 6.]

The explanation of the fact that we have not a full account of the President's arrival at Long Branch in this edition is the inexcusable failure of the Western Union Telegraph Company to provide proper telegraph facilities at Elberon. Most of our dispatches from there to-day have



been delivered two hours or more after they were filed; and since the arrival of the President's train the dispatches have stopped entirely, both those of our special correspondents and of the Associated Press. Our dispatches in the third edition explain how it happens that the telegraph company serves the public so poorly at this exciting time.

[Post, Wednesday, Sept. 7.]

The correspondents of morning newspapers from Florida to San Francisco have filed their last dispatches more than an hour ago, but even they are haunted by misgivings of renewed complications to this unfortunate Long Branch division of the Western Union Telegraph Company, which has proved so wholly inadequate to do the work expected of it. Yesterday's early dispatches told you how only one wire connected Elberon with the outside world all day; that wire was monopolized by Attorney-General MacVeagh, who refused to allow it to be used for any except government business. Such was the condition of things hours before the Presidential train arrived, and all careful correspondents went down to the West End Hotel, a mile and a half along the coast, to make sure that when dispatches were sent down there by special messengers there would be no delay in their transmission. The appearance of affairs in the Western Union office of the West End Hotel was not reassuring. There had been talk about fifteen operators at the West End; but at 11 o'clock in the morning there were only two; vague promises as to the other thirteen were held out, and the office chief insists that all will go right. What the local officers of the Western Union Company stationed at the West End Hotel understand as "all right" may be judged by the following history of one dispatch sent off from Elberon at five minutes after two o'clock: A messenger rode from Elberon to the West End at a break-neck pace and got the dispatch there at ten minutes after two. "Very sorry," say the people in the Western Union office, "but we cannot send that dispatch from here; but we have a boy who will take it down to the Mansion House, where there are plenty of operators." "Well, where is your boy?" inquires the messenger. "He'll be here soon; he's around somewhere near, getting his dinner." The messenger, who has strict orders to be back at Elberon within half an hour, waits ten minutes for that boy to get through his dinner, and with him wait a dozen correspondents or messengers of afternoon newspapers all over the country. The press of the country waits while a ten-year-old country boy eats. When the boy does appear at half past two he is not allowed to go off at once, but is intrusted with some piece of the quadruplex instrument which broke yesterday and can be repaired only by a certain jeweler, living a mile from the West End Hotel. Of course the dispatches are all too late for the regular last editions of the newspapers. Said one irate correspondent: "If the local manager of the Western Union Company was made of the right stuff, he would have hired in advance every boy in Jersey out of petticoats rather than have this happen."

#### REASONS FOR THE DELAY.

The following, published in Mr. Gould's paper, was written by Night Manager T. Dolan:

[World, Sept. 7.]

The officers of the Western Union Telegraph Company have been hard pressed since the President's removal to Long Branch to comply with the immensely increased demands made upon them for the transmission of messages concerning his condition.

Mr. Downer, the manager of the company's office in New York, explained yesterday to a *World* reporter the difficulties which had to be encountered, and the measures taken to meet them. He said: "We have eight wires running to Long Branch. When it was finally decided on Monday to remove the President to Elberon, we could not possibly put up any more wires, as such an undertaking would require at least two weeks. However, to meet the additional demands made upon us we quadruplexed the wires, which necessitated the removal to Long Branch of 1,000 cells of battery, a number of instruments, stands, tables, etc. We also sent a force of twenty-one additional operators, eight of whom we brought from Washington. From our main office in Long Branch to West End is over a mile, and from West End to where the President is staying,

a little below the Elberon Hotel, is about the same distance. We have only one wire from West End to Elberon, so in order to give every facility in our power for the speedy transmission of news, we established a pony express between those points, employing three ponies. Of course, some newspaper correspondents and others may have felt aggrieved at the unavoidable delays to which their dispatches were subjected by the pony express from Elberon, but when it is remembered that Long Branch was full of correspondents from all over the country, even from small inland towns, all anxious to get the wires at the same time, it had to be a case of 'first come, first served,' and those that chanced to be a little behindhand could not possibly have been accommodated better with the means at our disposal."

#### BAD TELEGRAPHIC SERVICE.

[Herald, Sept. 9—Editorial.]

Why has the Western Union telegraphic service so sadly deteriorated recently? Nearly every mail to the *Herald* brings numerous complaints from business men and the non-commercial classes on the subject. The general tenor of these communications is that messages from near as well as distant points take hours and hours in transmission, thereby causing inconvenience and in many cases anxiety, loss of time, and, frequently, loss of money. To give one out of many instances of inefficiency: A dispatch filed at Long Branch a few days ago at three o'clock in the afternoon was not delivered until nearly three hours later at its destination on Broadway nearly opposite the Western Union building. The *Herald's* own experience in the receipt of its special dispatches bears out these charges of carelessness, mismanagement, or whatever other term the company may choose to call it. Matter intended for publication is delivered in the most unsatisfactory manner. The dispatches are late, and we know it is not the fault of our correspondents. This indifference to the interests of the public and the press is simply scandalous, and the grievances of which they so justly complain should be promptly redressed.

[Chicago Tribune, Sept. 11, Editorial.]

The business men of Chicago are loud in their faultfinding on the score of inaccuracy and delay in the telegraphic messages they send and receive. Particularly is this true of what is known as the Board of Trade branch of the service. It is said a perfect flood of letters of complaint pours into the Western Union office in this city every day, the number being so great that to properly investigate, rectify and explain would require the exclusive time of three or four employes. The company not being disposed to go to this expense, of course the great bulk of the complaints remain uninvestigated and unanswered.

Not a day or a night passes in the *Tribune's* telegraph room that does not bring from twenty to five times twenty samples of the grossest inaccuracy, inefficiency and incompetency on the part of the working force of the Western Union Telegraph Company. Dispatches, both special and Associated Press, are so brutally botched, either in the sending or receiving, or both, that it is in frequent instances utterly impossible to put them into intelligible shape, and the matter, be its character of the utmost importance, is perforce thrown into the waste basket.

In general the quality of the service rendered by the Western Union has undergone a marked deterioration within the past three months. The cause is not difficult to arrive at. The removal of all competition seems to have carried with it the removal of any necessity for first-class service, for almost from the very day of the consolidation the service began to grow poorer. We are informed that one of the first steps taken by the new management of the Western Union monopoly was a reduction in the wages of operators, the effect of which was to drive the best men from the company's employ, and to fill their places with ignorant and incompetent operators. It is the old story over again of monopoly, greed and indifference to the public interest. If the public complains there is no remedy; it must take poor service or none at all, and the only consolation to be found in the situation is in the certainty that this state of things cannot continue forever, and the probability that the public will not much longer remain helpless for lack of competition in the business of telegraphy.

#### An English Scientific Journal's Compliments to the "Journal of the Telegraph."

[From the Mechanical World of Aug. 27.]

Can any of our American subscribers or contemporaries tell us who is Prof. Maurice Keil, M.A., C.E.? More especially we desire to know of what science he professes to be a professor, and what college is so degraded as to acknowledge his teaching. More especially also we appeal to the *New York Journal of the Telegraph*, in its own interest, to furnish us with the information we seek to obtain. This journal, up to very recent times, occupied a reputable position, and we therefore regret to see that it has, in its issue for the 1st of August last, allowed itself to become the instrument of a most gross and glaring fraud.

In the month of May last we wrote an article on "The Future of Electricity," which was printed on pages 421 and 422 of our issue for the 28th of that month. This article has since then been wholly or partly reproduced in many directions, and has attracted a considerable amount of attention. In the majority of instances the reproducers have acknowledged the source from whence they derived it, and we have not hitherto complained of those who have not. We are fully aware of the difficulty of acknowledging an article to its parent, and are prepared to overlook an occasional omission of this character. The instance to which we will now allude, however, can have no excuse whatever, for it is one of the most flagrant acts of appropriation which has ever come to our knowledge.

In the issue of the 1st of August of the *New York Journal of the Telegraph*, in the most prominent position the editor could accord to it, occupying as it does the whole of the front page, appears an article headed,

#### THE FUTURE OF ELECTRICITY.

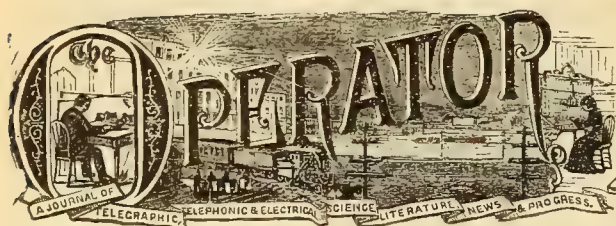
BY PROF. MAURICE KEIL, M. A., C. E.

This article, except in one paragraph, is word for word and sentence by sentence the same as the one written and printed by us on the 28th of May, and already referred to. This Autolycus has not thought it germane to the subject to reprint the end of our article, as it somewhat pointedly refers to people who are nearly as dishonest and unscrupulous as himself.

We invite the *Journal of the Telegraph* to afford us public satisfaction for so palpable a wrong, and the "professor" to do public penance for his piracy. Considering that the *Journal of the Telegraph* claims to be the official organ of the Western Union Telegraph Company of the United States, we cannot but, meanwhile, express our great surprise at the singular method of editing lately adopted by the conductors of that periodical. We are all the more anxious to know what explanation the *Journal of the Telegraph* has to offer, for the reason that in its previous issue another of our original articles was bodily "lifted" without acknowledgment.

Professor Cohn, of Breslau, is quoted as favoring the introduction of electric illumination, on optical grounds. While testing the influence of this kind of light on visual perception and the sense of color, Dr. Cohn proved, he thinks, that letters, spots and colors were perceived at a much greater distance under electric illumination than by gaslight, or even daylight; compared with the latter, it increased the sensation of yellow sixty-fold, red six-fold, and green and blue about two-fold. Again, eyes that in daylight or gaslight could perceive and distinguish colors only with difficulty, were much aided, he says, by the electric light, and the visual perception was much strengthened.





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### PROGRESS OF THE TELEPHONE.

Were it not for occasional meetings of the telephone people, which always attract widespread attention throughout the country, few people would pause long enough in their daily life to think of the wide extension of the telephone in the past few years, and the number of persons employed in operating it. "The National Telephone Exchange Association" was formed as recently as September of last year, its first meeting being held at Niagara Falls. Its second meeting was held at Chicago April 5 and 6 of this year, and yet at their first anniversary meeting last week, at Saratoga, the delegates present represented 180 different telephone companies in the United States, covering all the principal cities, while the capital represented was almost unlimited.

Their last meeting, a full account of which will be found in another column, shows that America is not only the home of the telephone, but that she also leads the world in its application, both in its science and the high standing of those employed in the business.

We cannot overestimate the value of the telephone, nor the latent possibilities involved in its increased use and a careful study of it. In one particular alone it has, in employing the cleverest electricians and most thorough-going business men, given a wholesome lesson to its older cousins—the telegraph companies. While the latter have been driving their best men away by despotic measures, the telephone people have been absorbing them into their system; consequently, while the telegraph companies have been nearly forty years in reaching what they call full growth—but which, in fact, is not half full growth—the telephone companies have done the same in less than four years. The lesson of this is, and it is one which the telegraph people might well take to heart, that increased facilities for telegraphing, even where they are apparently not needed, *make business*. Business facilities make business, and no one has recognized this fact more thoroughly than your representative telephone man. A., a smart business man, uses the telephone to B., an old fogey, and makes it necessary for B. to wake up and reply by telephone, and between them C. and D. are forced to adopt it.

Thus, while the telephone is a great institution in itself, and for itself, it is also doing good service for the telegraph, by teaching its managers just what ability, courage and celerity in handling the business of the public may do.

Now that the *Journal of the Telegraph* has been given a lesson in editing, it might not be out of place for us, its junior by seven years, to deliver it a lecture on the subject of the proper functions of a telegraphic paper. Whether such a journal attempts to be purely scientific or only gossipy, or even a judicious admixture of both, it must first of all be reliable, and it would also be as well to be newsy occasionally. During the great war between the Western Union and the American Union, the coolness and persistence with which the *Journal* ignored Gen. Eckert, Mr. Bates and the entire American Union Company was the source of much wonder to our thinking men. So far as that journal was concerned, its readers rarely, if ever, heard of the American Union. It would be much better, in cases of that kind, to face the music, pointing out where the opposition were acting unfairly, defending its own people and explaining their policy. THE OPERATOR, for instance, is an example of success in this direction, since it is taken and read by all parties. It covers everything, aims to be just to all, and is very generally reliable in its data—its New Year's "Review" of the year just closed being accepted as authority, and carefully preserved in thousands of scrap-books. A glance back through the files of the *Journal of the Telegraph* will show that THE OPERATOR is the only reliable record of our profession, for when the former journal has not been filled with long dreary articles, like the charge of a grand jury, it has been making the most absurd misstatements. It has, for example, in a General Order, told the operators, when sending press, to make . . . at the end of each news paragraph, when, in fact, they were to make — — —. It has gravely told us of an operator who could receive by sound and write down a message with his left hand while he was at the same time sending a different message with his right hand. It has (Dec. 1, 1879) jauntily informed its readers that a telephone circuit was worked from a point in Nebraska to Sayre, Penna., a distance of 2,000 miles, when in fact it had been worked only  $\frac{3}{4}$  of a mile—a trifling error of 1,999 $\frac{1}{4}$  miles, which it corrected in an off-hand way a month afterward. Then, only last May, in reviewing a treatise written by "J. E. H. Gordon, B. A. Camb."—which THE OPERATOR promptly informed it means Bachelor of Arts, Cambridge (England) University—it announced with glorious nonchalance that the treatise was written by "J. E. H. Gordon and B. A. Camb"—two men. This is a kind of "editing"—shoveling the matter in—which is grossly misleading and highly offensive to good taste.

THERE is a good deal of dignity and quiet disdain in the lecture which the *Mechanical World* administers to the Western Union Company for trying to illustrate the fact that in its endeavors to maintain an official organ dirt-cheap the scissors are mightier than the pen. The *Mechanical World* is severe. There is honest indignation in its complaint that in the *Journal of the Telegraph*, for Aug. 1, there appears an article "word for word, and sentence by sentence, the same as one written and printed by us (the *Mechanical World*), on the 28th of May." Then we have some mild reproof in the sentence: "Considering that the *Journal of the Telegraph* claims to be the official organ of the Western Union Telegraph Company of the United States, we cannot but meanwhile express our great surprise at the singular method of editing lately adopted by the conductors of that periodical." Then it strikes a mournful strain, and sighs, "This

journal—that is, the *Journal of the Telegraph*—up to very recent times occupied a reputable position." Then coming back to the main point, the *Mechanical World* gets angry again, and talks of another of its articles which was "bodily lifted" by the *Journal of the Telegraph*. In view of the company's enterprise in branching out from a system of guerilla warfare on the time and money of its operators into literary piracy, "lifted" is an appropriate term. But it is in the matter of calling names where the *Mechanical World* comes down like a trip-hammer. "This Autolytus—that is, the *Journal of the Telegraph* again—will set its editorial staff reading Shakespeare, where, in 'A Winter's Tale,' they may reflect upon the devious ways of the original 'snapper-up of unconsidered trifles.'" It would appear that the *Mechanical World* has completely flattened out the *Journal of the Telegraph*, but the end is not yet here, since our hypercritical contemporary, the *Electrician*, which delights to pick flaws in the grammar of American journals, should take its English neighbor in hand for the use of the tautological phrase "from whence."

THE Pennsylvania Railroad, which pays its operators twenty-nine dollars per month, is rapidly losing the confidence of the public, through fatal errors made by its overworked and underpaid telegraphers. Since our last issue they had a collision, near Philadelphia, owing to an operator's mistake, in which General Manager Frank Thomson's private car was smashed into kindling wood, many passengers were more or less hurt, and the lives of a great many were in imminent peril. It is only a few months since the same railroad, through an error of one of its operators, wrecked an express train at Bear Swamp, near Trenton, N. J., sacrificed thereby two human lives and severely wounded many people. The same thing must happen again, and the public should know it, for it is absurd for a corporation, even one as mean as the Pennsylvania Railroad, to secure reliable telegraph operators, for the despicable "salary" offered by them. Passengers are at the mercy of these operators who work the block signals, and any company which will offer twenty-nine dollars per month for all the training, all the sleeplessness, all the fidelity necessary on an operator's part to maintain the system, is simply trifling with the lives and limbs of its patrons.

THE gathering of Pioneer Telegraphers at Niagara Falls, on the 20th inst., should bring together a great number of the veterans of the service, and, if they once get together, we bespeak for them a good time. When the guests assemble at the place of meeting they will register their names, time and place of entering the service, and the first position held and the one at present occupied, and, before adjournment, the photographs of all are to be taken singly and in a group; though if they "take" nothing but photographs we believe that it will be scarcely satisfactory to such a crowd of good fellows, and that a few may take something on their own account. Not only those at present engaged in telegraphic service will participate, but there will be many scattered veterans present who have long since forgotten their original avocation for other callings. Some of those who were at the gathering last year at Cincinnati have passed away since then, but they should not be forgotten, and, in honoring those dead ones; let us not forget the memory of that cultured telegrapher and most amiable gentleman—the late James Nye Ashley.



THE raking-over which a great portion of the public press is giving to the Western Union Company is having its effect in better service all around, and in extracting from the company a show of greater public spirit. This is encouraging, and we hope the improvement will continue. The management was caught slightly napping upon the first rush from Long Branch, consequent upon the removal of the President, but somebody finally opened up the company's "bar'l," and money enough was then spent to pay for securing proper facilities. It's like drawing teeth, but they are learning quickly, and it rather looks now as though the economists must go. If they have to spend a little extra money upon these occasions, there is no use in the managers running the flag down to half mast and wearing crape on their hats; it will all float back to them again in increased business.

WESTERN UNION stock is quoted at \$92 $\frac{1}{4}$ . Last issue it was \$88 $\frac{5}{8}$ . The price rose somewhat on reports of extraordinary earnings and some rather vague expectations that the next quarterly dividend would be marked up to two per cent. As a matter of fact the Executive Committee met Tuesday the 13th, and recommended to the Board, which met yesterday, the propriety of declaring a dividend of 1 $\frac{1}{2}$  per cent. As to the report of the company's extraordinary earnings there appear to be two sides. The *Herald* says that the statement will show that after deducting the coming dividend there will remain a surplus of about \$400,000. Of this amount about \$150,000 was carried over from the last quarter, the remaining \$250,000 being the ostensible increase of earnings during the past three months. Parties who, to a great extent, are "a power behind the throne," likely to know what they speak of and pledge themselves as to the veracity of their statements, aver that the above surplus has not been acquired from the legitimate earnings of the company's business. During the last six months, say they, the Western Union Company has sold securities, consisting of Gold and Stock Telegraph Company stock, Cuban Cable Company stock and other assets to the amount in cash of about \$1,025,000, which sum, they further aver, has been added to the current earnings. If this statement be true, there would result a deficiency of some \$775,000 in nine months' business after deducting three dividends of 1 $\frac{1}{2}$  per cent, or in other words the company's net earnings for the nine months will not exceed 3 $\frac{1}{2}$  per cent.

MOUNT WASHINGTON was treated recently to an electrical surprise party. Three bolts of lightning struck its summit, or its near neighborhood, in rapid succession. The signal station and Summit House were hit at the same time, though they are 20 or 30 rods apart, and some damage was done, while several persons had narrow escapes. According to a writer in *Harper's Monthly Magazine*, the "goings on" at the signal station on the top of Mt. Washington are something terrific. One night the wind rose from 100 to 150 miles an hour. Although the stove was red-hot, water froze within three feet of it. The loose ice was dashed against the house in a roar. There came a crash. In spite of an iron bar and several strong wooden buttons, the oaken inside shutters were blown in, and it was all two men could do to force them back into their place. A cleat had to be nailed to the floor and a heavy plank placed between it and the shutters in order to keep them in place. At 4 o'clock A. M. the wind had risen to the velocity of 136 miles an

hour, and they momentarily expected the building would go tumbling down the mountain. But, after that, the wind decreased, and at 9 o'clock it was only 10 miles. "Suppose the house had gone, and the hotel stood fast, could you have effected an entrance into the hotel?" asked the reporter. "We could not have faced the gale," said the signal service man. "Not for a hundred feet? Not in a matter of life and death?" "Impossible. The wind would have lifted us from our feet like bags of wool. We would have been dashed against the rocks, and smashed like egg-shells," was the reply.

FOR some weeks past the officers of the Bankers' and Merchants' Telegraph Company say their poles in the State of New Jersey have been cut down during the night, and they were finally compelled to call upon the authorities to stop the nuisance. At 5 o'clock on the morning of Sept. 6, a Newark constable arrested a man named John Davis, who, the complainants say, is one of the line men employed by the Western Union Company, in the act of cutting down poles in the neighborhood of Franklin, N. J. He was brought before Justice Rodrigo, in Newark, and held in \$2,000 bail on three charges. The first charge was for malicious mischief, the second for conspiracy and the third is made under a special New Jersey statute enacted for the purpose of preventing the cutting down of poles. It was asserted in the office of the Bankers' and Merchants' Telegraph Company the next day that Davis had been bailed out by J. B. Feary, manager of the Western Union's Newark office. When arrested Davis stated that he had been directed to cut the poles down by H. McAleer, a superintendent of construction of the Western Union. McAleer has also been arrested and held in \$2,000 bail.

It always does us good to note the success of an operator, so that we are gratified to read in the English papers that Andrew Carnegie—some years ago messenger boy at Pittsburgh, and later operator at Altoona, Pa., but now a millionaire iron master—is creating something of a sensation in England. He is accompanied by a party of friends from America, and has been making a tour of Great Britain with his own four-in-hand. Starting from Brighton, in England, he finished at Inverness, in Scotland. At his native town, Dunfermline, to which he has been a munificent benefactor, he was received by 8,000 persons, the Provost at their head, and Mr. Carnegie's mother laid the first stone of a public library to be erected by her son at a cost of \$40,000. He had already built swimming baths at a cost of \$25,000.

OUR esteemed British contemporary, the *Mechanical World*, wants badly to know who is "Professor Maurice Keil, M. A., C. E."—the person who, with the aid of a pair of scissors, a paste-pot and an old copy of the *Mechanical World*, "wrote" such stunning articles for the *Journal of the Telegraph*. We don't believe that the Professor is an American, since in that case he would have been "General" Keil, or a Colonel at the very least, and we think that our English contemporary may make up its mind to the fact that Professor Maurice Keil, M. A., C. E., belongs to that mythical order of beings so well represented by Tom Collins, Mrs. Harris, that One Man in Charleston, Giovanni Purissimo Morosini and other preposterous or grossly improbable persons.

THERE are now half a million miles of telegraphic wires in the United States; Great Britain uses 114,000 miles of line; Germany has 150,000 miles and more than 3,000 miles of underground cable; British India has 50,000 miles; France, 115,000; Belgium, 15,000; Spain, 25,000; Denmark, 65,000, and Norway, 10,000 miles, which are used chiefly in the management of her fisheries. The Emperor of China has allowed 1,270 miles to be built during the past year. Persia has 6,000 miles and Egypt 9,000. Russia has 130,000 miles in use. Australia has 15,000 and New Zealand 10,000. South America, with the exception of a trans-continental line from Valparaiso to Buenos Ayres, and a short line between Aspinwall and Panama, has no land lines.

IN the British House of Commons, Mr. G. Stewart MacIver has given notice of the following motion: "To move, early next session, for a select committee to inquire into the working and management of the Postal and Telegraph services, with a view to ascertain whether increased facilities and lower rates cannot be afforded; and also to consider and report on the relationship of the letter-carrying and telegraph services to each other, and the best means of securing efficiency in both branches, having regard to their constantly-increasing importance in their bearing on social and commercial life." The newspapers of this country seem to be giving notice to the Western Union Company to do something of a similar character.

STRANGE how many hotel and steamboat clerks there are by the name of Gillespie. In telegrams addressed to them these gentlemen's names are generally parted in the middle thus, "Mr. Gilles, pie clerk, etc." A San Francisco correspondent reports a case of this kind out there; an ex-operator in St. Paul, Minn., has just been telling a newspaper reporter of another instance of the same nature in his experience, and a correspondent at the South draws attention to a similar barbarism on the part of a receiving operator there. The moral seems to be that the Messrs. Gillespie should choose some other avocation and thus not put temptation in operators' way.

THE OPERATOR is always pleased to point with pride to an old-time telegrapher who has risen, by industry, perseverance and the exercise of more than ordinary business ability, to a high and honorable position in life. None whose portraits we have yet published deserved the compliment more than the gentleman whose picture will be found on our first page to-day. Mr. Vail has accomplished in a few years more than it falls to the lot of most men to compass in a lifetime.

A WESTERN UNION manager in an adjacent city has been compelled by circumstances to add five dollars to the salary of several of his \$50 men. At last accounts he was not convalescent, but was doing as well as could be expected. Pulse 194, temperature 103.9, respiration 8.

IN reply to a correspondent we would say that Mr. J. H. Emerick, 120 Broadway, New York, is Superintendent of the Mutual Union Telegraph Co.'s lines between Boston and Washington.

"THE Lord's Day Observance Society" is dissatisfied with the Paris Electrical Exhibition, because it is kept open on Sundays.

DON'T forget the Old-Timers' convention next Tuesday



## Notes and Queries on Electricity and Electromagnetism and Their Applications.

BY T. D. LOCKWOOD.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 151. What sizes and qualities of wire are suitable for telephone lines?

A. Any kind of wire that is suitable for telegraph lines is in the abstract equally suitable for telephone lines, both as a matter of economy in first cost and for ease in manipulation; it has, however, been found expedient, ordinarily, not to use a larger wire than No. 12, galvanized iron. For long lines, such as those between cities, Nos. 9 and 8 are generally used.

A much smaller wire of steel can, however, be profitably used on short lines, for the following reasons: A small steel wire is as strong as a much larger iron wire. It is, therefore, very easy to handle while it is being strung, and this is quite a consideration. It is also a comparatively easy matter to obtain permission to erect a fixture on a roof where very light wires are employed, and by using small wires induction is much diminished.

On the other hand, the resistance of the conductor is greatly increased, both because that conductor is steel, and because a small wire is used. Insulation is thereby rendered proportionately difficult. These considerations cannot, however, outweigh the previous ones, because on such short lines as those we are speaking of—for example, from half a mile to a mile long—the resistance, at the greatest, is not so much as to render the line at all difficult of insulation; and, in the second place, no sensible difference is perceived in using a telephone, even where the resistance is considerably increased. Furthermore, so far as signaling is concerned, the tendency is decidedly to use magneto electricity for signaling, and these currents can never have any difficulty in doing a reasonable amount of work or in ringing a bell loudly over more miles of steel wire than can be expected within the limits of any American city.

Copper wire has been spoken of; and is used to some extent, but its high intrinsic value and the number of supports rendered necessary by its use will necessarily act against its general introduction.

Q. 152. What amount of stretching should good iron wire bear without breaking?

A. In different countries different standards are given. For example, on the government telegraphs in England line wire is required to be able to elongate 18 per cent. before breaking. The Western Union Telegraph Company specifies that line wire must be capable of a 15 per cent. elongation. It is safe to say that any wire for telegraphic purposes should at least be capable of stretching to the latter percentage. The breaking strain should be not less than two and a half times the weight of the wire per mile, that is, if a mile of wire weighs 200 pounds, and a piece of it is undergoing a test for strength by suspending weights from it, the wire should not break until the amount of weight reaches 500 pounds.

Q. 153. What is to be understood when the "dip" of a line wire is spoken of?

A. The dip of any telegraph line wire is the sag between the poles; that is, when a wire is strung, it is never pulled up tight between the poles, because if it were so strung, it would break very easily from any cause. Consequently, between the poles the wire dips, or sags down in a wide curve, which is deepest at the middle of the distance from pole to pole.

Q. 154. How is the tension or degree of tightness with which wires are strung, regulated? And is there any dip which is regarded as a standard?

A. In America there has been very little regular practice of this kind, and the only rule has been for every line foreman to do that which was right in his own eyes; and, in view of such a fact, the small amount of trouble that our lines give on the average is astonishing. It is, however, an obvious fact that line wires must be strung sufficiently tight to prevent crosses, and sufficiently slack to avoid breakage from slight causes, or from any ordinary change in the temperature of the air. It has been ascertained by the British telegraph engineers that this happy medium is attained when the dip, with

a temperature of 60 degrees Fahrenheit, is twenty-four inches in a span of one hundred yards. This dip may then be approximately taken as a standard.

## Chicago Notes.

To The Editor of The Operator:

SIR: The Chicago Tribune of to-day takes the Western Union very severely and pointedly to task, on account of its miserable service hereabout. Your correspondent thinks that if the local managers here be not hampered by a policy of retrenchment, emanating from higher authorities, there is room for suspecting that it would be well if they would endeavor to infuse a little more life and nerve into their several departments, by a wiser liberality in rewarding talent, a more industrious attention to the weeding out of the dull and inefficient, and a general rearrangement and brightening up of the system under their control.

The present state of affairs may be summed up in a few words. The W. U. Company is doing an unprecedented amount of business—fortune and misfortune, happiness and distress, all contributing alike to swell the great aggregation of messages to be daily handled (as also of cash to be counted). In many directions facilities, in the way of wires, have not nearly kept pace with the probably unexpected public requirements. The reliable and experienced operators called to this office have been overtaxed in their labors, and not sufficiently recognized and encouraged by salaries that would make it an object, or at all desirable, for them—in view of their prospects of health, and the arduous duties imposed—to long remain in such positions.

Chicago is one of the most important telegraph offices in the world, and it is enlarging at an astonishing rate. Its local business is probably as great or greater comparatively than any other city of the land, and its business to be repeated to and from the great West, North and Southwest is not less important and vast, and should all be handled by the most sober, reliable and experienced men to be obtained. Scores of such men have tarried here from time to time, within the last few months, but, tiring of incessant and enervating labor, remunerated not more liberally than many of the incapable and shirkful, and burdened with increasing necessary and incidental expenses, they have soon retired to quieter shades and more comfortable livings; either to the larger railroad offices, as superintendents' clerks to interior towns, to distant frontier posts, or to other callings and pursuits, and there are many more here who contemplate a speedy and like change. All such men could be retained at an considerable advance in salaries and a fair imposition of duties. The whole basis and system of salaries and promotions is now, your correspondent believes, unfair and discouraging. It affords no incentives to the careless and inexperienced—leading them to ambitious efforts and aspirations—nor fixes any restraint upon the habitually intemperate delinquents and absentees, who, instead of constantly sharing in the work of the office, are, as regularly as they possess a few dollars, deserting their posts, and leaving increased burdens to the more faithfully disposed. The almost infallible artist of proved reliability and ten to twenty-five years' experience, receives no more salary than he of innumerable shortcomings and five years or less in the service (and there have been known cases where the salaries of individuals of the latter class, in official favor, or by official oversight, have been the highest). Such has been the rule since the earliest remembrance of the oldest "knights of the key." Will any one pretend that the service of the Western Union is of as high a standard of efficiency as it would have reached had there been ruled some distinguishments in the orders of merit and salaries? Will any one imagine that the company has gained any more of wealth and strength by such indifferent attention to the relative talents and abilities of its employes, or that the great public in consequence is now being so well served as it should be?

Your correspondent will take the liberty, before closing, of adding another item of particular and agitating interest to the operators of Chicago. Soon after the famous consolidation an order was posted here requiring Sunday work without extra compensation. The day of rest

and of God is not now recognized to the favor of any, no matter how deeply his or her soul may be impressed with the holy and cherished teachings of a lifetime. The ladies, even, whose religion is the best part of their existence, after a wearying week of toil cannot enjoy the Sunday rest accorded all civilized beings without losing a distressful portion of their daily bread. Will heaven prosper even the possessors of a hundred millions in such cold, ungrateful and mercenary consideration of the means and power by which the acquirement of those hundred millions was made possible?

It will be charitable to suppose that the authors of the above order have not given its meaning serious thought; and it will be fair to think that the order did not emanate from those who must, perforce of their vital interests, have the welfare of the company most at heart; and, finally, it will not be unreasonable to predict that, when all questionable irregularities are properly brought to the attention of "the powers that be," a glorious future, full of glittering promises, will not be condemned for the sake of little present advantages.

BON SOIR.

CHICAGO, Sept. 11, 1881.

## Sunday Work at Chicago.

To the Editor of The Operator:

SIR: About six weeks ago a petition was presented to the management, signed by at least 75 operators on the day staff of this office, asking that extra compensation be allowed for Sunday service.

As no acknowledgment has been received up to the present time of writing, we are ignorant as to its disposition.

This compulsory Sunday work is beginning to assume a serious aspect, and a wide-spread feeling of dissatisfaction is engendered thereby. No one of the officials here likes to shoulder the responsibility, consequently we know not whom to go to for redress. The company is making nothing by this short-sighted "economy." More complaints are filed respecting the Sunday business that passes through this office than regarding that of any other day in the week. The Sunday operator reasons in this wise, and quite logically and naturally, too: When I engaged myself to this company five years ago, Sunday work was not stipulated. Now I am compelled to give eight hours every month without receiving extra compensation for my services. If I am a quarter of a day late during the month it is deducted from my salary. This I do not object to, because I expect nothing that I do not work for; but as I am doing this for nothing, they are welcome to all they can drag out of me while here. I will work faithfully during the week,—but, hang me, if I will do it Sunday, if not paid for it.

We would have been more contented with a five per cent. reduction than with this deal, because it would have, at least, seemed a little more fair and honorable.

Good men are scarce to-day. What will it be when the Mutual Union gets fairly under way?

Col. J. J. S. Wilson, who has always proven himself to be a good friend of the operators, will find no difficulty whatever in securing the very best talent Chicago now boasts of.

In nearly all the larger offices men have to work Sunday. Where they do not get extra compensation there is generally something to offset it. Take New York, for instance. If I am correctly informed, the day force only work nine hours, and about every seventh Sunday, and then they do not work as long as we do.

It won't do for head-quarters officials to plead ignorance as to the existing state of affairs in this office any longer. This is the third time it has been brought under their notice during the past three months. All we ask is that this Sunday work be relegated back to the place it occupied before the consolidation.

A DISSATISFIED ONE.

## Is the Telephone Operator Properly Fed?

The following from the New York Evening Express would seem to contain many points of vital importance to the above class of intellectual workers:

"The existence and efficacy of nerve food has been established as a scientific fact. That the waste of mental energies and the exhaustion of



intellectual power may be in some measure compensated for by the use of certain forms of food in certain conditions is no longer denied by the best medical authorities. Critical examination of the human brain shows its component parts to be of a character susceptible of reconstruction, the more rapid and effectual in proportion to the nature and ingredients of the food consumed from which its sustenance is drawn. In the Blanchard Prepared Foods we find this general principle utilized (a further description of which will be found in our advertising columns), and for which is claimed unusual merit as a restorer of enervated vital forces and diminished mental vigor. This mental tonic is a concrete extract of wheat and beef (artificially digested, that it may not tax the vital energy in the process of assimilation), and, while free from merely stimulating mixtures, feeds and vitalizes the blood, the brain and the subsidiary nervous ganglia in such manner as to be of great service to those whose intellectual resources are constantly taxed in the performance of the more arduous mental duties which fall to the lot of the world's great teachers and masters. The argument above is based upon the undisputed physiological fact that the gray cell of the nervous tissue, which is the active material organ of the intellect, has only one natural want, that of sufficient proper food, and aside from all scientific theories and deductions, the position seems to have a natural basis in common sense, which indicates that strength and vigor, physical and mental, reside primarily in the great natural means—food. In fact, there can be no other basis. The success attending the application of these celebrated foods shows conclusively the value and soundness of the theory promulgated. Thousands of eminent physicians are daily prescribing them.

Further information concerning these valuable foods can be had by addressing any of the principal offices of the Blanchard Manufacturing Co., proprietors:

No. 8 Tremont street, Boston, Mass.  
No. 28 School street, Boston, Mass.  
No. 149 Canal street, New Orleans, La.  
No. 27 Union square, New York City.

## TELEPHONE DEPARTMENT.

The Telephone Exchange in Rome, Italy, has more than one hundred subscribers. The Société Générale Italienne des Téléphones has established exchanges in other large towns.

Telephonic communication between Newburgh, N. Y., and Fishkill, a distance of seventeen miles, was opened on the 1st inst. The cables are in perfect order. Connection is now had also with New Hamburg.

It has been suggested that the nearly forgotten phonograph be used as an adjunct to the telephone; that is, to make the phonograph record permanently what the telephone articulates, thus definitely fixing the responsibility for all errors in the transmission of messages.

At the Paris Electrical Exhibition the telephone rooms are lined with Oriental carpets, overhead and under foot, as well as all round, to exclude from them all sound from without. On the occasion of President Grévy's recent visit, the members of the Presidential party were placed in communication with telephones and told to listen. They put their ears to the apertures and were very attentive. At the Opera-house a chorus was engaged in singing the hunters' song of "Der Freischütz." This was heard with fair distinctness in some passages. In "La Prière de la Muette" the parts got confused, and where there should have been musical effects there was a buzzing as of Brobdignagian bees.

The Uniontown (Pa.), *Standard* says: "We saw an old lady clad in Quaker garb, and wearing the time-honored 'shaker,' on our streets

the other day. Said a gentleman to us: 'There goes Elisha Gray's mother; she's the jolliest, cheeriest old lady you ever saw.' And so it was; a face she wears that seems the index of a heart overflowing with the 'milk of human kindness.' And this old lady in sober drab is the mother of Elisha Gray, the inventor of the telephone—the celebrated electrician. She has returned to visit the friends of her earlier years. Here her boy worked as a simple mechanic in Wood & Crowlow's planing-mill, and even then was nurturing those dreams which have had such a brilliant realization."

A dispatch from North Adams, Mass., on the 7th inst., says: "The New York & Vermont Telegraph and Telephone Company is to run its wires from Troy, N. Y., to all towns and villages on the line of the Troy & Boston Railroad to North Adams, connecting with the Bennington (Vt.) Telephone Company. The latter stock is controlled by Richard G. Bennett, of Troy, and George W. G. Ine, of Valley Falls, N. Y., who, with Ensign S. Randall and Charles A. Nims, of Troy, who control the former company, will push the new enterprise through from here. The line will connect with the Commercial Company, and will open communication with Albany and Troy, thus covering a circular area of 125 miles. This will be the longest telephone line in this section of the country. Work is to begin immediately."

A considerate editor, with a good deal of human nature in him, thus speaks a word for the hard-working 'phone operator: "It is natural for man to indulge in the illusions of hope and to swear at the attendant on the telephone call board. Almost every day some one comes in and tells us to 'cuss' the Central office, or he will stop his paper. Now we propose to give the Central a fair show, and do some of the 'cussing' on the other side. More than half the time the one at the other end is to blame, and if they only had the patience to wait a moment until the operator connected some one else who rang first, all would go well. It is wonderful why a man whose patience can stand every other test, will lose his temper at the telephone. Imagine yourself in the place of the dulcet toned damsel who presides up there, and 325 subscribers yelling and scolding and grumbling, because everything don't work like lightning. How would you like it to stand there and have such expressions as the following fired at you: 'Hello! HELLO! HELLO?' and then change and swing on order of syllables and inflection. 'Are you asleep?' 'I've been calling two hours.' 'What in — is the matter up there? If you can't make this d— thing work you can take it out.' Well, there's two sides to every shield, and when you read this, reflect before you abuse the 'Central.'"

## DASHES HERE AND THERE.

If you want to become a telegraph operator, send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.

THE Cotton Exhibition which opens at Atlanta, Georgia, on the 1st prox., should make the telegraphic business quite lively in that section of the country.

Communication by the French Cable Company's cable, between Land's End, England, and Brest, which had been interrupted for about two months, was restored Sept. 4.

The destructive effects of the use of gas near the pictures of Baudry in the new Opera House, Paris, have become so obvious that the authorities decide to illuminate that part of the theatre by electricity.

A cable dispatch from London says that Anglo-American Cable Company's shares rose  $\frac{3}{4}$  of 1 per cent. Sept. 11 on rumors of negotiations of Mr. Gould, who, it is stated, asks 25 per cent. of the gross receipts as the proportion for his two cables.

OFFICE OF THE BLANCHARD MFG CO.,  
27 Union Square, New York.

The third quarterly dividend for the year 1881, of three per cent., is payable Sept. 21, 1881. Transfer books closed Sept. 11.

H. P. Sisson, Secretary.

According to reports attributed to the officers of the Western Union Telegraph Company, where dynamic generators have been substituted for decomposition batteries for the generation of the

current, the cost of charging the wires with the dynamic current is about one-half of what it was under the old system.

Mr. A. B. Smith advertises the Barron Flexible Key-Knob in the present issue. These key-knobs had a very extensive sale among telegraphers when advertised before, a short time ago, and the universal indorsements they received were of the most unmistakable character. There is no reason why they should not have an equally large sale now. Every one troubled with telegraphers' paralysis should give them a trial.

Telegraphic blundering and rash emendation brought about a scare at Accrington in England recently. A dispatch was received at the Mechanics' Institute, saying the Earl of Edinburgh was dead. As no such title was known, somebody in charge altered "earl" to "duke," and the news spread far and wide that Her Majesty had lost her second son. The death intended to be announced was that of the Earl of Gainsborough.

The *Electrician* says: The Carmarthen County justices have just committed an Irishman named Hurley to one month's hard labor for snatching up from a table in an inn, chewing and swallowing a telegraphic message, with a shilling wrapped up in it, that was intended for transmission elsewhere than down his, apparently, capacious maw. One month's hard labor will no doubt do much towards aiding digestion of the toothsome morsel.

The Central District Telegraph Company's messengers at Pittsburgh, Pa., struck on the 9th inst., about 6 o'clock, without informing the company of their intentions. The boys have hitherto been receiving from \$12 to \$18 per month, according to their experience, and now demand an increase to \$18 for all messengers on night or Sunday. The strike caused much inconvenience for a few hours until a sufficient force could be obtained to handle the business.

The amplifying telephones advertised by Messrs. Holcombe & Co. give excellent satisfaction as the following will show:

FREDERICK, Md., July 27, 1881.

GENTLEMEN: We received the telephone safely and erected it to-day, and we are delighted with it. A gentleman who has a Bell telephone just examined it and was very much pleased with it. It works admirably. We can distinctly hear a watch tick over it.

Respectfully,  
C. R. HARDT & W. E. HOWE.

KEY PORT, N. J., July 28, 1881.

GENTLEMEN: The telephones came duly to hand; they are now in good working order on a line of 1,800 feet with six angles. Messages came satisfactorily on first trial. Yours truly,  
W. HODGSON.

## NEW YORK CITY ITEMS.

Echoes From 195.

195 Broadway is reorganized about once in every three months.

Mr. George Warren has returned from Denver and again buckled on the telegraphic armor.

The original message read: "President not expected to live. Market all down." But as delivered it ran: "President reported to live; not dangerous at all."

"What kind of a man is Lenhart?" inquired a Jersey operator the other day.

"Lenhart?" replied the N. Y. man. "He generally summers at the Fifth Avenue Hotel, and there is on him the unbroken seal of one

'Solemnly elected

With gifts and graces eminently adorned  
To some great work."

Mr. A. S. Downer, manager of the Western Union main office, this city, has resigned, much to the regret of the employés there. The resignation takes effect to-day, Sept. 15. Supt. Merrihew will look after the office for the present. Who Mr. Downer's successor is to be is not yet known.

Marine Chief Weller has been taken off the Long Branch quadruplex, and is now acting as receiving operator on the Washington motor. While on the marine wires Mr. Weller won golden opinions as an independent and forcible talker, and a telegrapher of unusual merit and attractiveness of style.



As an OPERATOR commissioner tarried on the veranda of the Brighton Beach Hotel, the other evening, he overheard General Anson Stager say to a Western Union Chief: "I was always in favor of offering inducements to good operators to remain in the service." The scribe went on his way pondering, and as he groped in his pockets for a nickel to pay his fare, he wondered if telegraph operators would continue to allow themselves to become poorer and Western Union stockholders richer.

#### Other City Items.

The Mutual District Messenger Co. has now ten district offices open and ready for business.

Mr. A. E. Healy and A. A. Wyllie, of 135, leave on the 15th for a month's vacation. They spend most of the time at their homes in Canada.

*Palmer's Telegraphic Error Detector*, published by Mr. J. E. Palmer, 128 Broadway, New York, whose experience on cable and telegraph lines extends over fifteen years, is quite a novel idea of detecting errors in telegraph and cable messages. It is, without doubt, the simplest and most complete error detector published, and will be found useful to all business men using the telegraph. It not only points out the telegraphic errors, but shows how errors occur through indistinct writing. The price, postage pre-paid, is only 25c.

On the 11th inst., Thomas McDonald, a waiter, fell from the promenade roof of the Metropolitan Concert Garden, this city, and was instantly killed. The roof is inclosed by a brick wall four feet high, surmounted by a six-foot iron railing. McDonald climbed to the top of this railing to regulate an electric lamp. He carelessly or ignorantly put his hand upon the wires conveying the current, and received a shock which startled him and caused him to lose his balance. He fell into a yard in the rear of a dwelling-house in Fortieth street. McDonald, as well as the other waiters, had been forbidden to touch the lights.

A very enjoyable meeting took place at the new Mt. St. Vincent Hotel, at 148th st. and St. Nicholas ave., New York, on the evening of Aug. 31, 1881. The occasion was a dinner tendered to Mr. Ralph W. Pope, late Deputy Superintendent of the Gold and Stock Telegraph Co., by his former associates of the Gold and Stock and the Metropolitan Telephone and Telegraph companies. After discussing the good things provided for the guests by Mine Host Koch, Mr. Breslin made an eloquent address and presented Mr. Pope with a beautiful gold watch as a testimonial of esteem and regard from his former associates. Among those present were Supt. Scott, Asst. Supt. Small, Chief Inspectors Scott and Waldron, Chief Operator Sullivan and Foreman of Construction Orford, of the G. and S. Co. The Metropolitan Telephone Co. was represented by Purchasing Agent M. W. Doran. After several speeches, songs and toasts, the company broke up at a late hour.

#### PERSONAL.

Mr. C. E. Bacmeister has left Kansas City and is now in St. Louis.

Mr. C. F. Flynn, from Adrian, Mich., relieved Mr. Heine as operator at Osceola, Ind., L. S. & M. S. Railway.

R. H. Folwell is manager of W. U., Three Rivers, Mich., vice B. W. Warner, who resigned to go into more profitable business at Elkhart, Ind.

George H. Patterson, lately with the Montreal Telegraph Co., Galt, Ont., has accepted a situation as operator on the Western Division of the L. S. & M. S. Railway.

Mr. W. F. Heine, operator at Osceola, Ind., for the past two years, was promoted to the agency at Burdicks, on the Western division of L. S. & M. S. Ry., Sept. 1.

Mr. C. R. Hosmer, formerly superintendent of the Dominion Telegraph Company, of Canada, has been appointed General Manager of the new Canadian Mutual Telegraph Company.

Daniel Woodrow, operator at Bergner & Engel's brewery, Philadelphia, fell while on duty at that establishment, last week, and hurt himself badly. Tetanus set in and he died on Saturday last.

Mr. J. F. Russ, who for the last year has been in the employ of the Michigan Central R. R.,

at Michigan City, Ind., has accepted the day telegraphic position on the Pan Handle, at Kokomo, Ind.

Miss Lizzie Dawson took charge of the W. U. office at Allegan, Mich., Aug. 1, Mr. Geo. R. Stone retiring to give his attention to his other duties as postmaster and agent for the American Express Co.

A letter from England is awaiting W. H. Johnson, recently employed by the Gold and Stock Telegraph Co., in the care of Charles S. H. Small, Assistant Superintendent, Room 48, W. U. building, New York City.

L. L. Lavenberg, an ex-Michigan Central operator, and lately private operator to Superintendent of Pullman Company at Chicago, is now a popular conductor of a Pullman car, on the C. & G. T. Railway, between Chicago and Montreal.

Mr. M. R. Wolff, W. U. manager at Baltimore, Md., has resigned, and accepted a pleasanter and more important position as superintendent of the telephone lines in that city. Mr. C. R. Tracy, of the B. & O. Company, takes Mr. Wolff's place with the W. U. The latter is succeeded by Mr. Frank Warden, also of the B. & O. Company.

Mrs. Jane E. McCarty, of 17 E. Eager street, Baltimore, Md., is anxious to learn the whereabouts of her only son, John McCarty, a telegrapher, who was seen in Santa Fe, N. M., about eighteen months ago, but who has not written home for more than three years. Any one knowing his address will please communicate with Mrs. McCarty as above.

E. & Terre Haute R. R.—Following changes were made Sept. 1: C. T. Knight, agent, Fort Branch, vice J. R. Hedden, resigned; N. Bush, agent at Shelburn, vice C. T. Knight, transferred. Mr. C. J. Hepburn, train dispatcher, is from Chicago, and is a very clever gentleman. He took charge Aug. 1, when the C. & E. I. took hold of this road. The officials have introduced a new system in railroad bookkeeping and train orders, very much liked by our operators. Wages are pretty good, and men not too plenty. More changes are to be made soon, of which I will inform you. KN.

G., H. & H. R. R.—This road runs between Galveston and Houston, Texas, about 50 miles run. Mr. Jno. W. Considine, late of the K. P., Kansas City, is our genial train dispatcher, and well liked by all. W. F. Higgs holds forth at Highland. J. H. Blumenthal is agent and operator at Clear Creek. Mr. D. S. Gallagher is agent and operator at Harrisburg. At Union Depot and freight, Houston, are Mr. D. K. Marmion and Ferg. Marmion, who is always willing to lend a hand in playing croquet. Since Jay Gould has bought us out we are having new steel rails put down, and in a few weeks we will be the boss little road of Texas.

#### OLD RELIABLE.

PORTLAND, ME.—Mr. E. B. Saylor, one of the Boston quad, operators, was married to Miss Dollie L. Pettingill on the 1st inst., by the Rev. George D. Lindsay, at the residence of the bride's parents in this city. The presents were numerous and beautiful. Their tour extends over a period of a month's duration through the States and Canada. Mr. John Malone is substituting for Mr. K. W. Starbird, while Mr. Starbird takes Mr. Saylor's place on the quad, very acceptably. Mr. James Malone returned on the 1st inst. from a month's vacation; Mr. Rideout, of Boston, filling his place during that time. Mr. Rideout on leaving us started for the West. Business with us was never better.

In view of the near approach of the President's death, Manager Rheem, of the Western Union Telegraph office, has sent to Chicago for five extra operators to assist in handling the vast amount of dispatches that will be sent out from Washington during the next few days. The rush at the Omaha office will be occasioned by the heavy press report that will be received by the Omaha papers and by the report for the California press, together with special dispatches. The extra operators are expected here tomorrow. Their names are Chet. Spencer, Dave Stormont, A. G. McGill, C. F. Hutchinson and L. M. Smith, all of whom are ranked among the best operators in the country. W. E. Huey, of Chicago, is also expected here to take a permanent position in the Western Union office. Some idea of the work done in the Omaha office may be

formed from the fact that during the month of July the boys handled 182,000 messages, besides 1,000,000 words of press report.—*Omaha Republican*, Aug. 28.

At Reno, Nevada, on the 25th of August, Messrs. George Senf, of Virginia City; S. W. Chubbuck, of Gold Hill; A. M. Ardry, W. D. Mann and J. F. Farrell, of Carson; W. D. Phillips, F. H. Macdonnell and F. C. Peterson, of Reno, invaded the residence of Frank Bell, ex-Superintendent of the second division W. U. Tel. Co. On behalf of the employes of the company in this division they presented to Mr. Bell a fine silver tea set. The service consists of a full set with tray, ice pitcher and goblet, perfume stand and butter dish; in all thirteen pieces, all gold lined, illuminated with telegraphic designs and appropriately inscribed. The usual presentation speeches were made, the principal one being by Mr. Senf, and acknowledged. It was a genuine surprise to Mr. Bell, who responded in a feeling manner.

#### BORN.

PEPPER.—August 18, to Herbert M. Pepper, operator W. U. Tel. Co., Springfield, Mass., a son.

COACH.—Sept. 5, at La Cygne, Kan., to J. W. Coach, operator A., T. & S. F. R. R., a daughter.

MEYER.—To C. A. Meyer, Chief Operator A. U. office, 135 Broadway, N. Y., a daughter.

MCNEVEN.—Aug. 20, 1881, to T. H. McNeven, agent C. B. & Q. R. R., Winchester, Ill., a daughter.

#### MARRIED.

BORCHERS—CONRAD.—Sept. 2, 1881, at the residence of Rev. Jos. Hartman, Chicago, Ill., W. P. Borchers, of the A. U. Telegraph Office, to Miss Sophia Conrad, both of Chicago.

### TELEGRAPHERS, SAVE YOUR GRIP!

USE THE

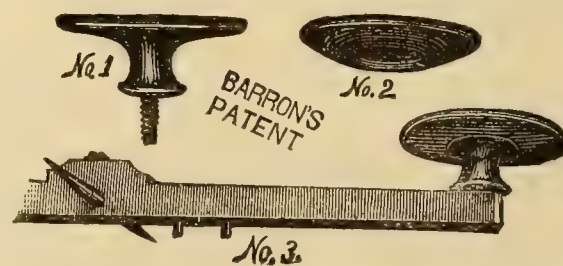
## FLEXIBLE KEY-KNOB.

It Relieves the Muscles and is Pleasant to the Touch.

IT IMPROVES WRITING, LARGELY OVERCOMES STICKING OF THE KEY AND FACILITATES SENDING.

It Prevents Telegraphers' Paralysis.

#### NUMEROUS TESTIMONIALS.



No. 1 shows a Flexible Elastic Key-Knob, to be substituted for the present hard-rubber knob. It will fit any key. No. 2 shows an Adjustable Elastic Cover. It will fit any key-knob. No. 3 shows the Adjustable Elastic Cover fitted to the key-knob.

Sent post-paid on receipt of price: No. 1, Seventy-five cents; No. 2, Fifty cents.

Canadian Orders ten cents additional.

Postage Stamps taken as cash.

ACTIVE AGENTS WANTED.

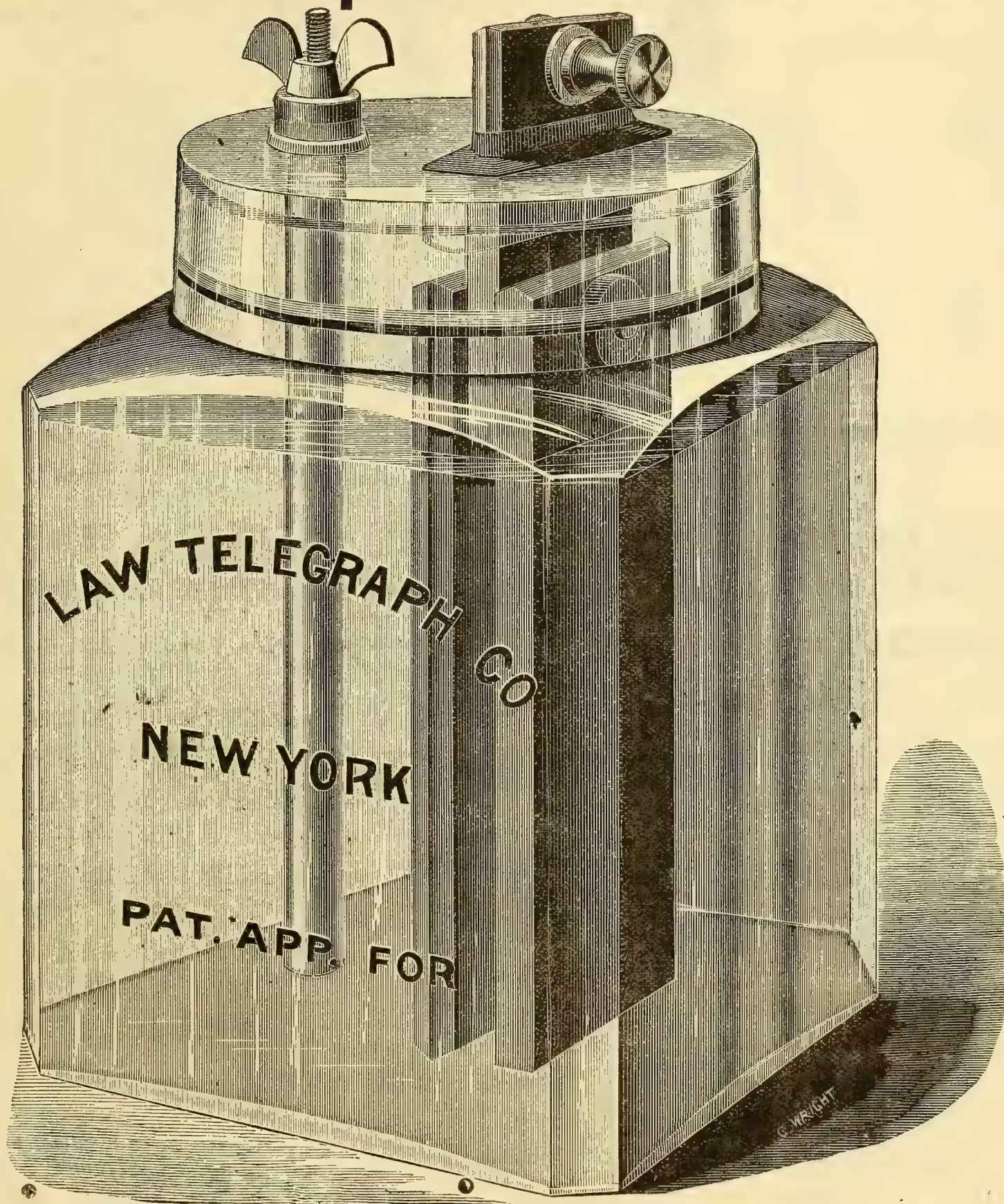
It is just what every Learner needs.

**A. B. SMITH, General Agent,**  
1,475 Broadway, N. Y. City.



# THE CELEBRATED "LAW" BATTERY, For Telephone Transmitters.

No Expensive "Prism" to Renew.



No Hidden Corroding Connection.

FOR SALE BY

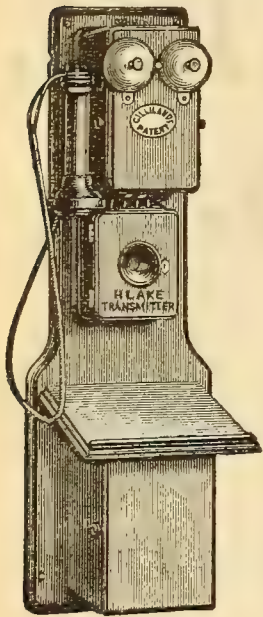
LAW TELEGRAPH COMPANY, New York.  
WESTERN ELECTRIC M'F'G CO., New York and Chicago.  
ELECTRIC SUPPLY CO., New York.  
GILLILAND ELECTRIC M'F'G CO., Indianapolis.



# GILLILAND ELECTRIC MANUFACTURING CO.,

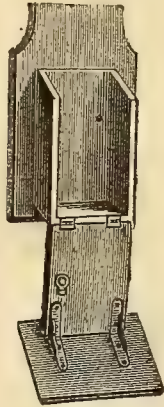
E. T. GILLILAND, General Manager,

INDIANAPOLIS, Ind.



STANDARD

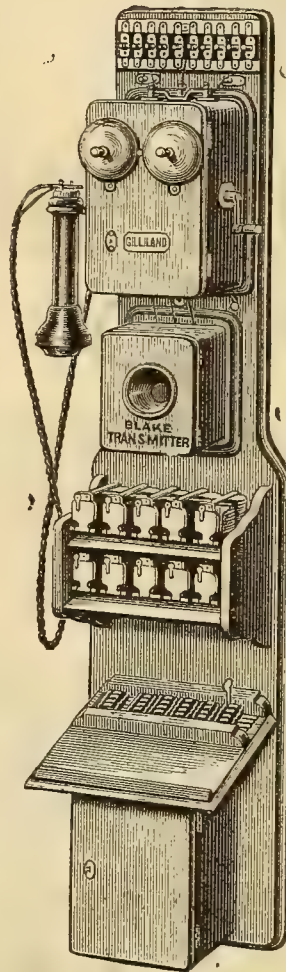
Magneto Bell.  
33,015 now in use.  
2,830 shipped in  
August.



Our latest improved BATTERY BOX has a value of prime importance in that the battery is exposed to view and easy of access in the setting up and cleaning. We furnish the Battery Box on all orders.

Over 1,200 of our Switch-boards in use  
in this country and in Europe

SAMPLES SENT ON APPLICATION TO AGENTS AND EXCHANGES.



TEN-LINE COMBINATION SWITCH BOARD.

## 10-LINE and 20-LINE SWITCH BOARDS,

For the club system of small towns and villages.

INVALUABLE FOR

State and County Institutions, Hospitals, Factories, Depots, Offices, Stores, etc.

Being complete, compact and handsome

COMBINATION SWITCH BOARDS are universally used; the demand is extraordinary and continuous, giving satisfaction in every particular.

## 50, 100-Line & Upward SWITCH BOARDS FOR EXCHANGES.

## SUPPLIES OF ALL KINDS.

SEND FOR CATALOGUE AND PRICES.

# "23."

**EVERY**  
ENTERPRISING TELEGRAPHER  
SHOULD HAVE THE  
**EMBLEMATICAL**  
"Operators' Card."

I wish to call the attention of every operator throughout the country to a card, which is a carefully studied design, and which is giving excellent satisfaction wherever circulated.

It is

**A MODEL OF NEATNESS,**

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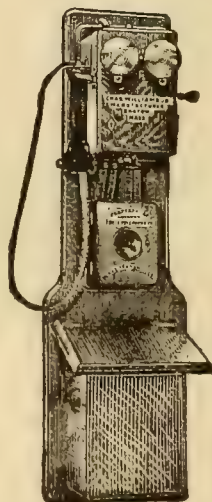
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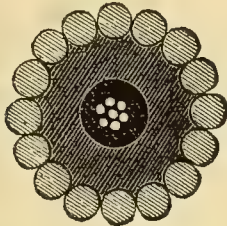
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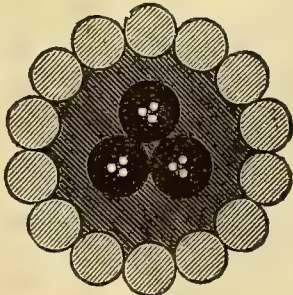
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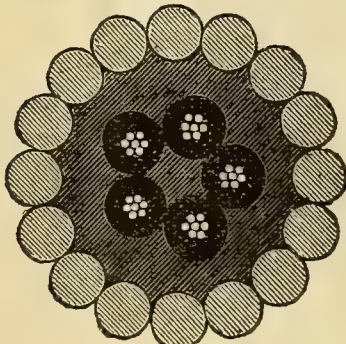
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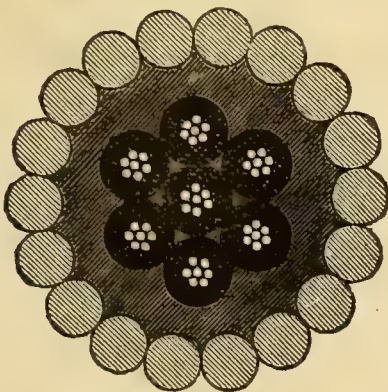
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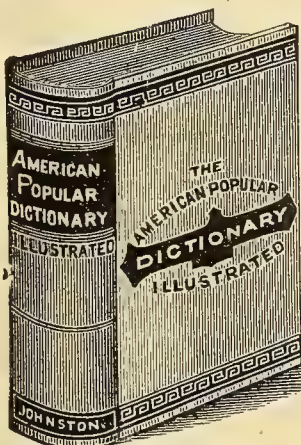
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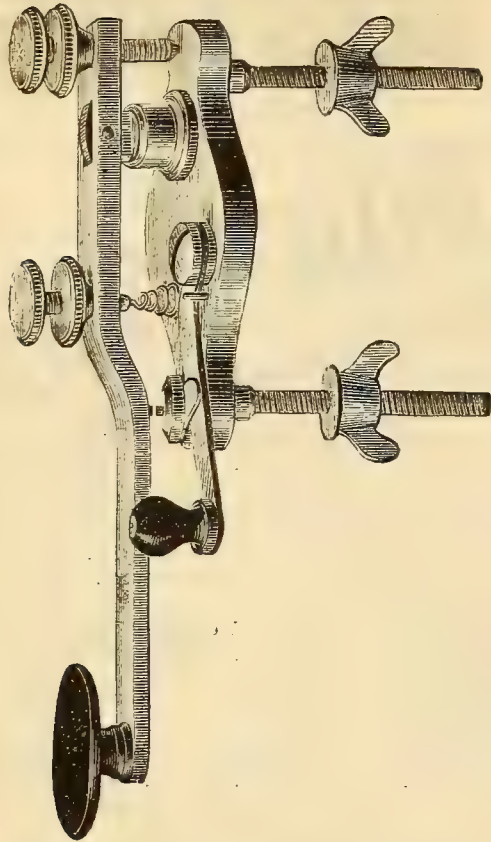
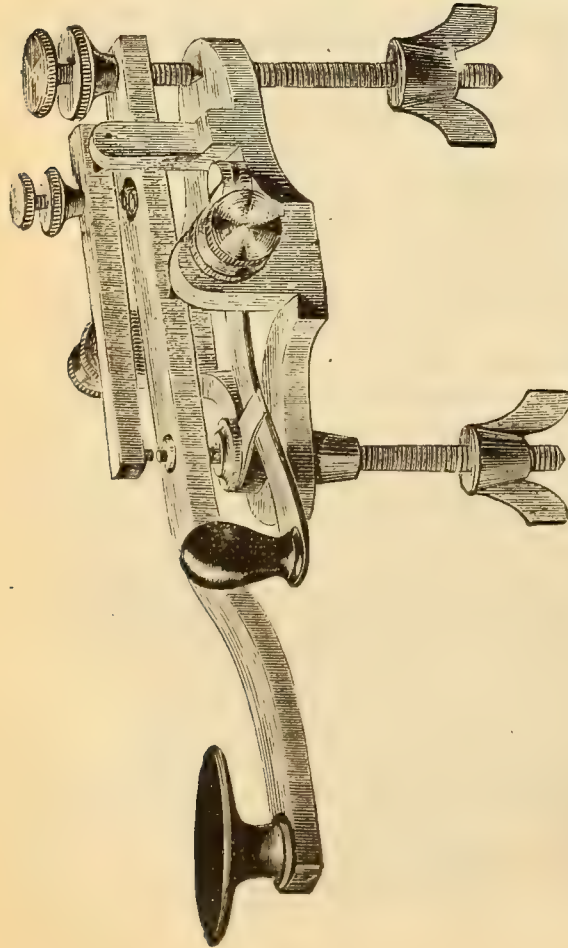
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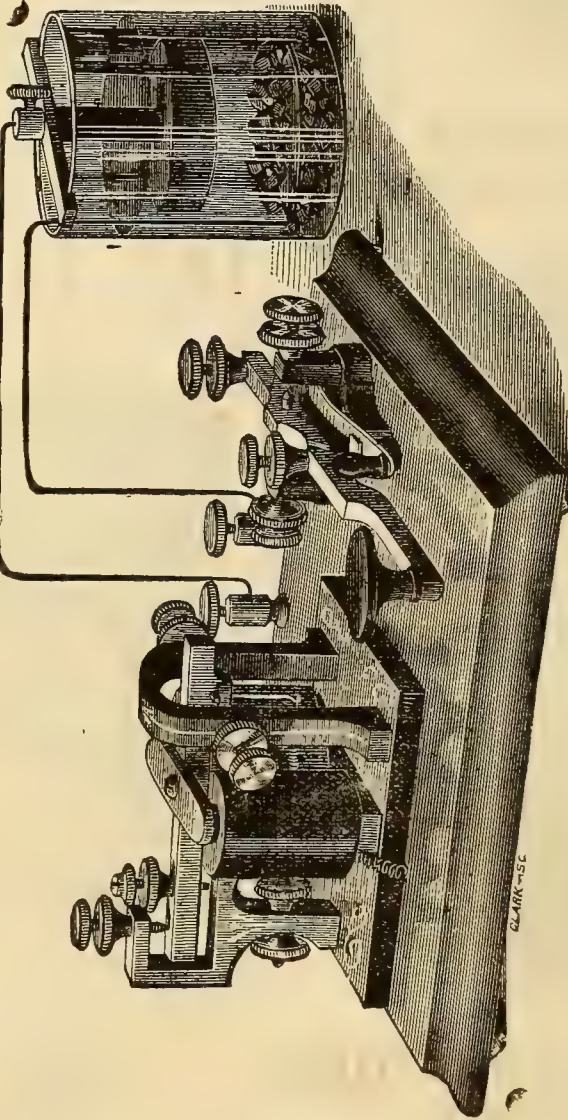
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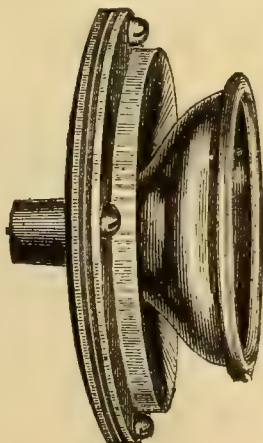
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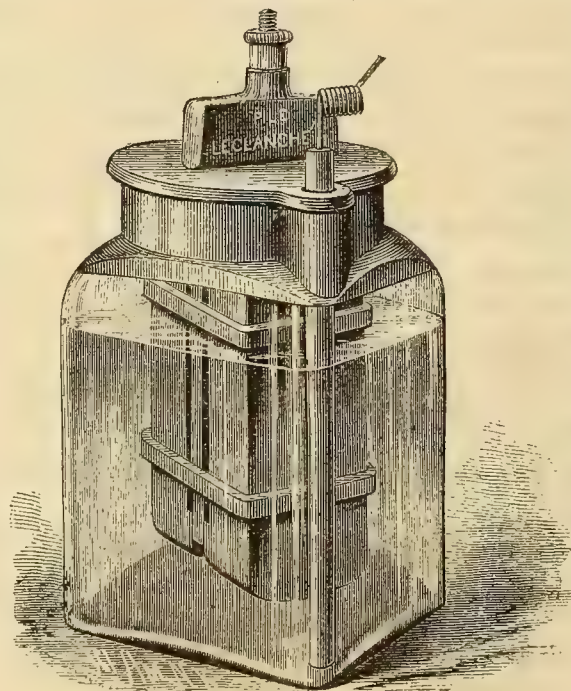
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The necessities of the telegraph business requiring an indestructible insulation, stimulated me to the discovery and perfecting of my compound known as Kerite, which combines the great advantage of durability with perfect insulation.

Kerite insulation is proof against the action of the corrosive elements in the earth, air and water; and, where it has been practically tested, has proved its superiority to all other insulation.

### DURABLE QUALITIES OF KERITE.

It is not injuriously affected by the extremes of heat and cold, experienced in our climate, nor by length of exposure in the atmosphere.

It will endure long-continued heat below two hundred degs. Fahrenheit, while for short intervals it may be subjected to from two hundred and fifty to three hundred degs.; and it may be safely immersed in boiling water.

The action of water, salt or fresh, not only protects all its qualities, but very much improves its insulation.

It is also unchanged by being placed in the ground. Any corrosive elements in the earth do not act upon it; nor is it injured by the roots of plants, which soon destroy gutta-percha.

There are thousands of miles in use throughout the country, by Fire Alarm and other Telegraph Companies of all our principal cities.

It has been used largely in the city of New York, under all conditions and exposures for the last nine years.

Constant exposure to the sun and atmospheric changes are the severest tests that can be given it in practical use.

### Eminent Electricians and Practical Telegraphists

commend and recognize the Kerite insulation as superior to all others.

At the Centennial Exhibition at Philadelphia, SIR WILLIAM THOMSON, the eminent electrician and scientist, awarded to the

### Kerite Insulated Wire and Cables

A DIPLOMA FOR

"Excellence of the Insulation and Durability  
of the Insulator."

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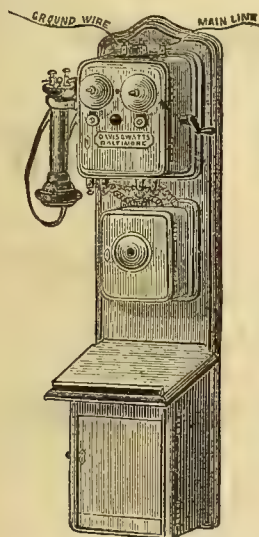
AUTHORIZED MANUFACTURERS  
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AMERICAN BELL  
TELEPHONE COMPANY,

Wholesale and Retail Dealers  
and Manufacturers of  
all kinds of

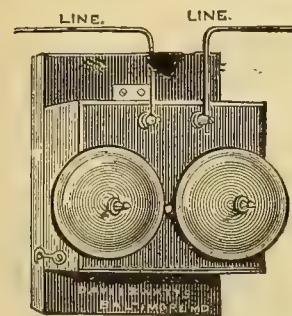
Electrical Apparatus and Supplies.

Correspondence solicited. We gladly furnish estimates on lines of any length, and material in any quantity.



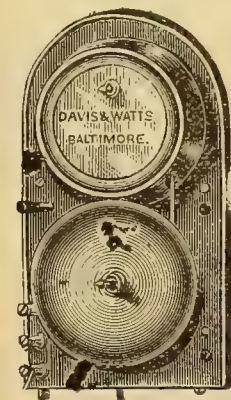
We make our MAGNETO BELLS of unexcelled power and durability, either with frictional or tooth gearing. One of each was started in our factory in the middle of April. They have been running ever since at the rate of 240,000 armature revolutions per day of 10 hours without being touched except to oil, and are as strong as ever. Our new auto-

matic shunt is the only perfect one made; cannot possibly fail. We are always glad to send samples.



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This is useful for placing in kitchen, engine-room, etc., to call attention to the signals where the office is, for the time, left vacant. It is placed directly with the main line, and provided with lightning arrester and cut-out.



Owing to changing our Telephone system from Battery to Magneto, we have a lot of our handsome nickel-plated bells, which we have put on new bases, removing all telephone connection, and will clear out at much less than cost of manufacture. They are wound to 30 ohms, with best silk-covered wire. Gongs are 3½ in. diameter and very loud, working parts incased in nickeled covers—which you like, either vibrator or single stroke.

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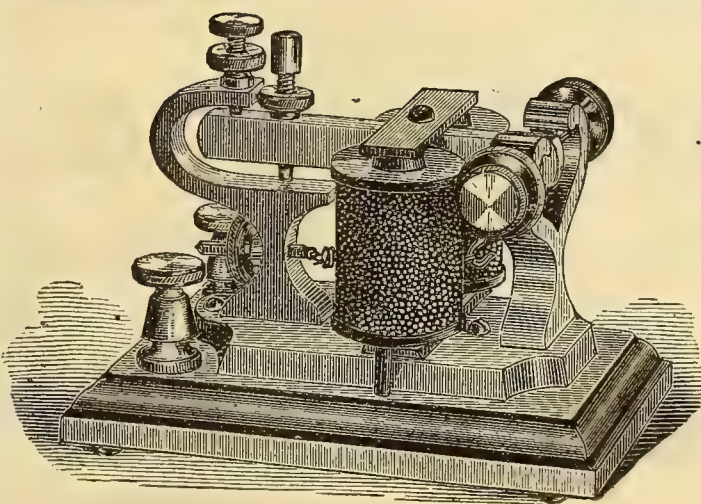
We are thoroughly practical in every department, and our manufactures and selections will be found fully suitable to meet all needs of the most improved

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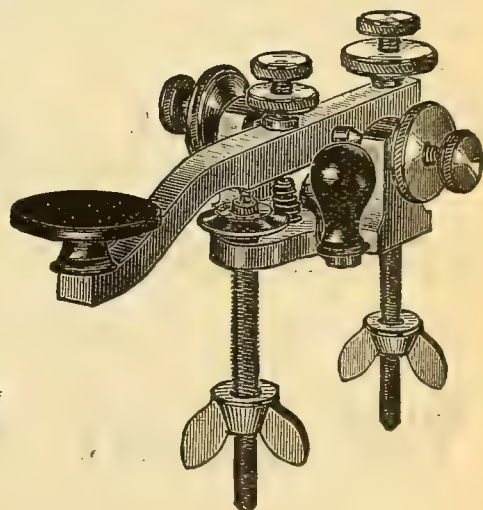
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O. K. SOUNDER, PRICE, C. O. D., subject to inspection \$4.



O. K. KEY, PRICE \$2.50.

These instruments are FULL SIZE, made ENTIRELY OF BRASS, FINELY FINISHED. The key knobs are rubber and the contact points pure platinum. Sent C. O. D., with privilege to examine before paying charges.

Or I will send the COMPLETE O. K. OUTFIT, C. O. D., with privilege of examination, for \$7.00.

The outfit consists of 1 KEY, 1 SOUNDER, 1 FULL SIZED CELL CALLAUD BATTERY, 1 ROLL OFFICE WIRE, 1 LB. BLUE VITRIOL, 1 DOUBLE CONNECTOR, 1 BOOK OF INSTRUCTIONS.

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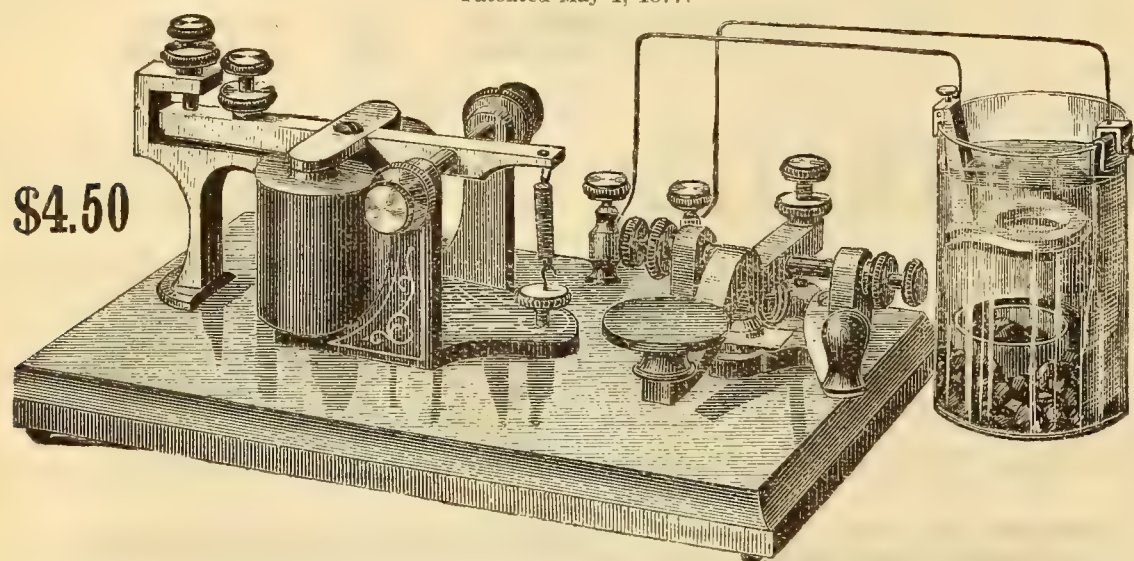
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\$4.50

Price for Complete First-Class Outfit, \$4.50 NET CASH.

For the above complete and Perfect Sounder and Key Combined, on mahogany base, including Battery, Chemicals, Wire, Book of Instruction, and everything necessary for a **FIRST-CLASS TELEGRAPH OUTFIT** for the Student's use, for practice **AT HOME**, or for operating **ALL SHORT LINES OF TELEGRAPH**.

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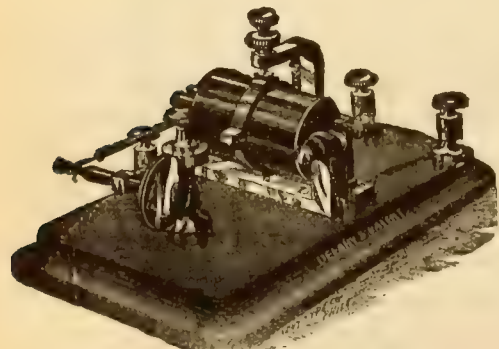
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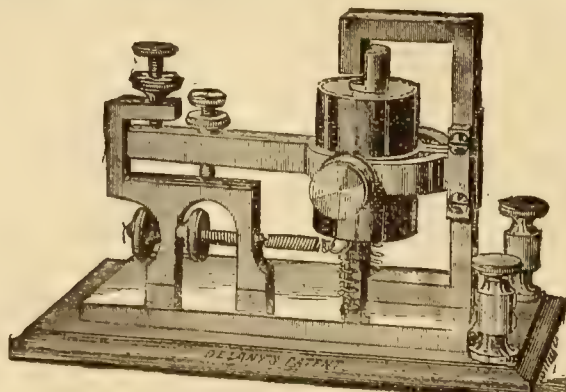
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Eminent Electricians and Practical Telegraphists  
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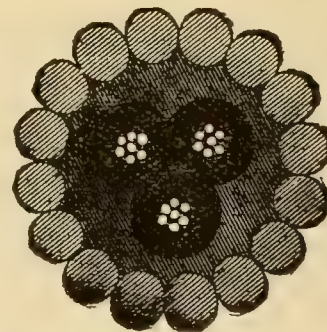
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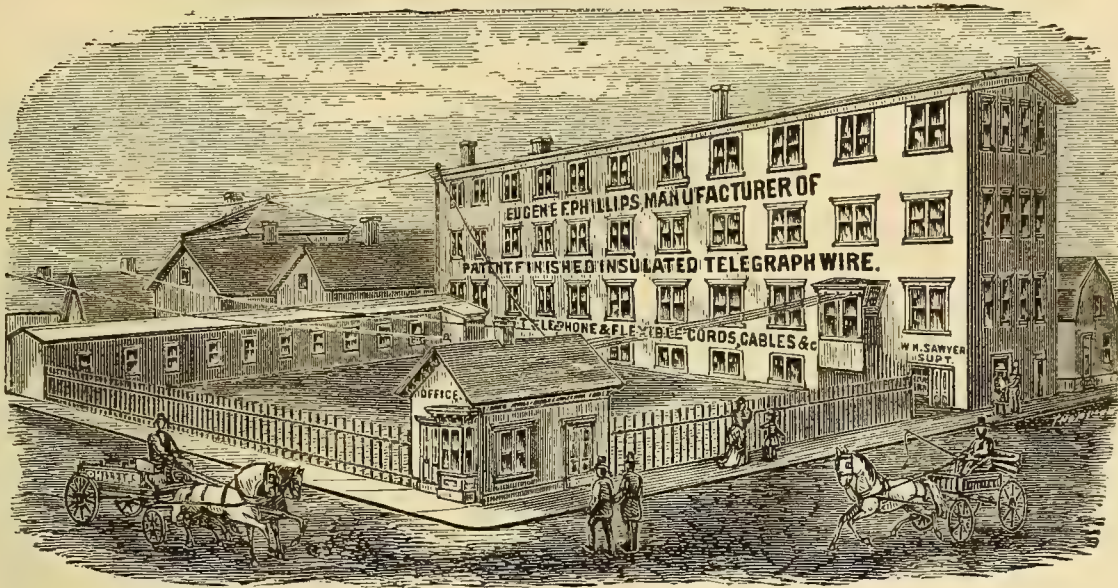
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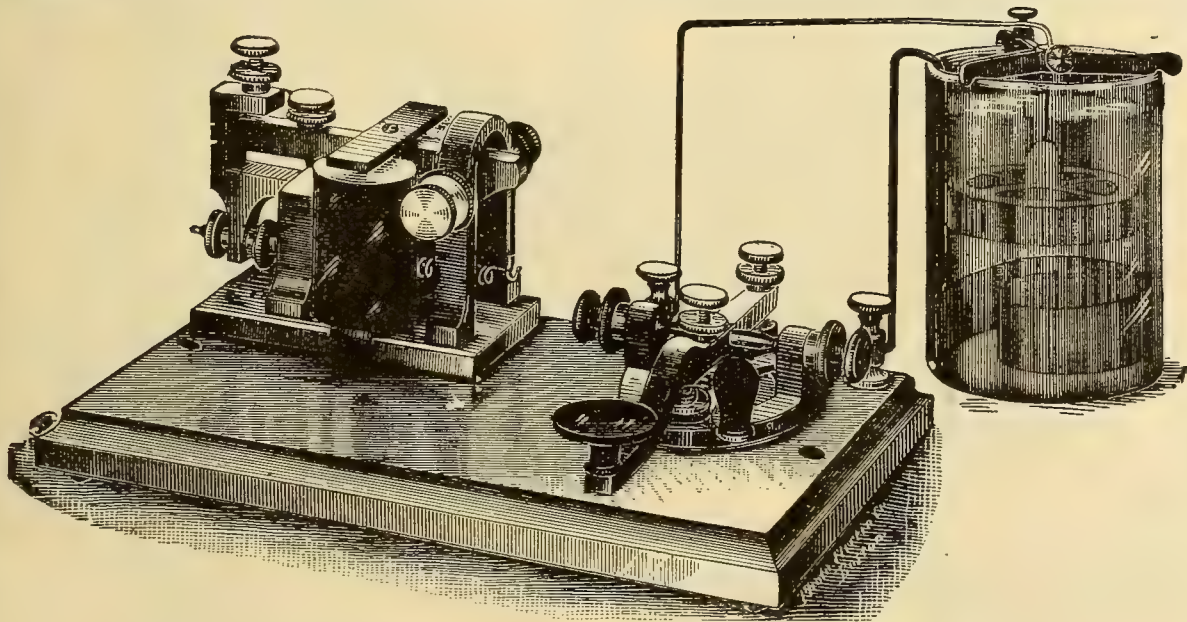
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Consisting of the above large-sized Sounder and Key, a good Cell of Callaud Battery, one roll of Office Wire, Book of Instructions, Chemicals, etc. The only low-priced Learners Instrument made that has nicely finished **BRASS** Sounder and Key lever, with perfect adjustments for both.

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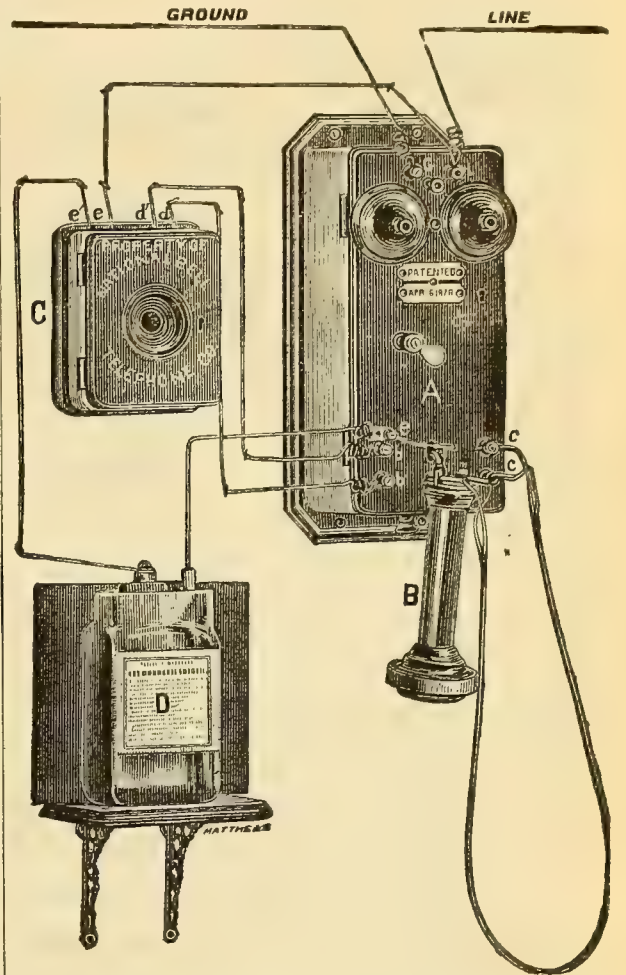
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## The American Bell Telephone Company.

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THEO. N. VAIL, General Manager.



This Company, owning the Original Patents of Alexander Graham Bell for the Electric Speaking Telephone, and other patents covering improvements upon the same, and controlling, except for certain limited territory, under an arrangement with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, the American Speaking Telephone Company, and the Harmonic Telegraph Company, the patents owned by those companies, is now prepared to furnish, upon application, either directly or through any of its agents, Telephones of different styles, and applicable to a variety of uses.

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in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

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systems, for business or social uses. Also to introduce the telephone for

### SPEAKING TUBE

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This Company will arrange for telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

We respectfully invite attention to this matter, and any further information relating thereto can be obtained from the Company,

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All persons using Telephones, not licensed by this Company, are hereby respectfully notified that they are liable to prosecution, and for damages for infringement, and will be prosecuted accordingly to the full extent of the law.



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F. W. H. SHEFFIELD, Sec. and Treas.

A. H. PALMER, Gen. Supt.  
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MANUFACTURERS OF

## Fire Alarm Telegraph

AND ALL KINDS OF

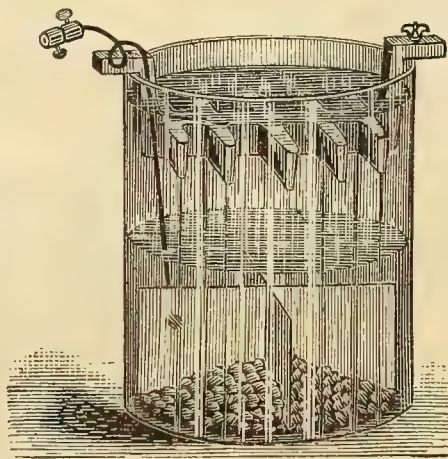
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Authorities of towns, either contemplating the introduction of a complete System of Fire Alarm Telegraph, or an extension of their old ones, should not fail to examine our recent improvements in Fire Alarm Telegraph Instruments, including our improved Pony and Medium Plain Signal Boxes. Our

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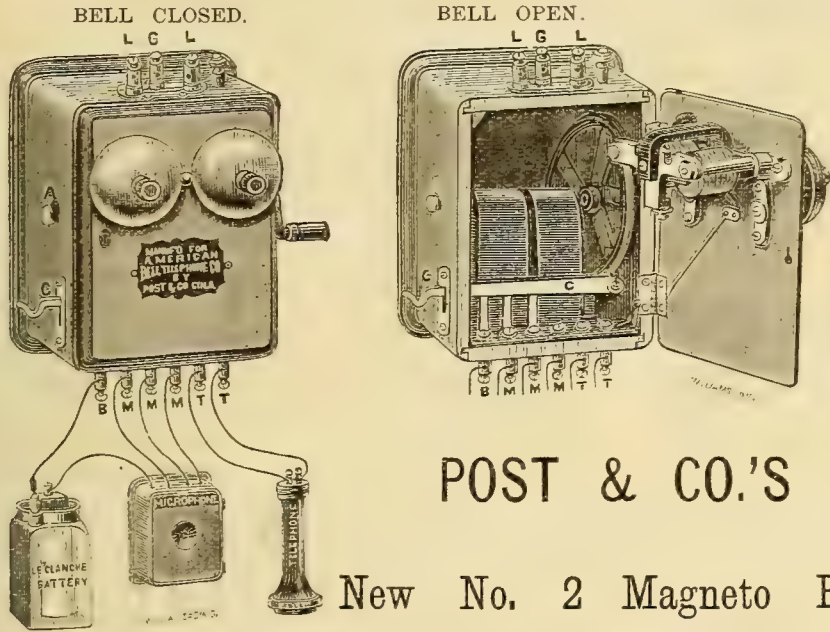


# TELEGRAPH AND TELEPHONE DEPARTMENT POST & COMPANY.

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Manufacturers of all kinds of Telegraph, Telephone and Electric Light Supplies.

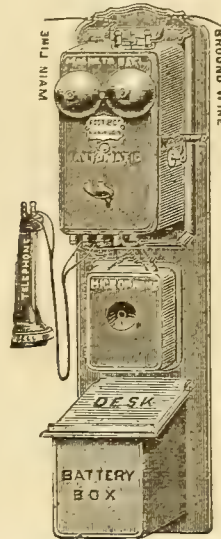
## NEW NO. 2 MAGNETO BELL.



POST & CO.'S

## New No. 2 Magneto Bell.

## Standard No. 1 Magneto Bell, 20,000 in use.



CINCINNATI, Aug. 1, 1881.

Below we give a few important changes we have just made in our Standard Magneto Bells, making them the strongest and best Bells made. All of these important points fully covered by Letters Patent.

1st. Our Horse Shoe Magnets, large and small, are made to lift six times their weight; none are passed unless this result is obtained. This strength is secured by means ONLY KNOWN TO US.

2d. The cylinders of our engine are metallic and inclosed so as to prevent escapes of any kind, and also prevent dust from accumulating on the armature, which in a very short space of time would wear out and destroy the GENERATING POWER of the ENGINE. Other makers NECESSARILY leave the sides open.

3d. Our switch is so constructed that it prevents lightning in ANY FORM from ENTERING THE MICROPHONE, by cutting out the primary and secondary coils entirely—a feature that no other box now manufactured has, and fully covered by our letters patent.

4th. We make the Automatic Hook Bell to use with the PONY CROWN TELEPHONE. NO EXTRA CHARGE. No posts on front. Connection made at top and bottom of Bells.

5th. All Bells tested to not less than 12,000 ohms resistance.

6th. We have so arranged the RINGER, GENERATOR, and FRAME work of our Bells that they can be easily adjusted without disturbing the wires in any manner or moving the base-board or bell.

7th. Test of Standard Magneto Bells at Exposition, Oct. 1, 1880.

Williams Magneto Bells rang through 11,800 ohms resistance, equal to say 370 miles No. 12 wire.

Post & Co.'s Magneto Bells rang through 19,775 ohms resistance, equal to say 625 miles No. 12 wire.

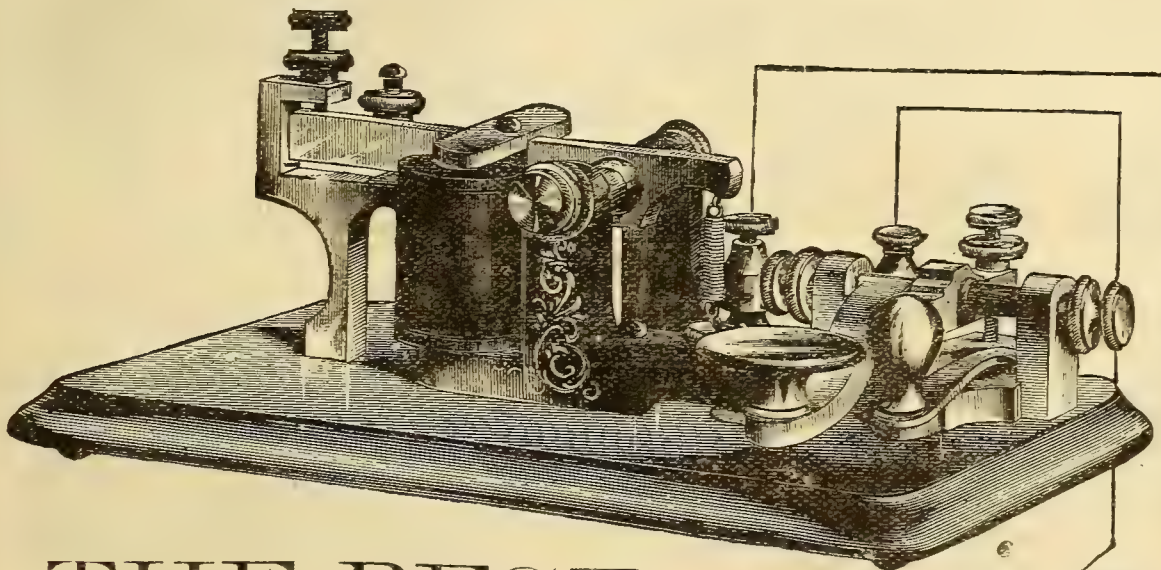
The record of this test is taken from Report of the Jurors in Class 77 on Electrical Instruments, and NEEDS NO COMMENT, as it shows our Bells have nearly double the strength of the others. The Gilliland Bell did not come in, although APPLICATION had been filed to enter same for competition. The jury awarded our Bell the HIGHEST PREMIUM—A SILVER MEDAL. Respectfully, POST & COMPANY.

CINCINNATI, Aug. 1, 1881.  
We have just perfected our New No. 2 Automatic Magneto Bell (as per cuts), and are now ready to furnish same to Exchanges and Agents of the American Bell Telephone Co. We guarantee same to ring over 10 miles of wire. We have given great attention to the construction of these bells and they will be found just the bells for short lines of all kinds—will gladly send out one bell or a case of 6 on approbation, to be returned if not satisfactory.

We call especial attention to our new switch-boards as being simple and substantial, NO CORDS TO GET OUT OF ORDER. We make them from 6 lines each up to any size wanted. Send for cuts of same. Our new battery boxes open down the front, so as to get at battery easy. We make them two sizes, for each size bell, also very fine ones for parlors and fine offices. Samples of our bells, etc., sent on application. Agents for Roebling's line wire. A full line of OFFICE WIRE, BRACKETS, INSULATORS, etc., on hand at all times at VERY LOWEST prices. Send for catalogue and prices.

POST & COMPANY, CINCINNATI, O.

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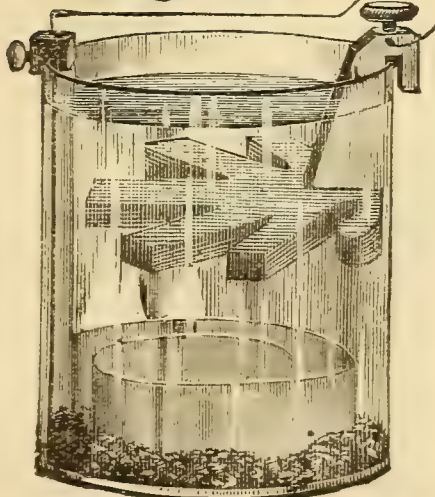


THE BEST.

Price, \$4.50, complete with Battery, Book of Instruction, Wire, Chemicals, and all necessary materials for operating.  
"Morse" instrument alone, without battery..... \$3.80  
"Morse" instrument, without battery, and wound with fine wire for lines of one to fifteen miles..... 4.50  
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It is the best working set of Learners' Instruments for short or long lines, from a few feet up to 20 miles in length.

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Complete sets of Machinery for Purifying India Rubber and Gutta Percha, and Insulating Wire.

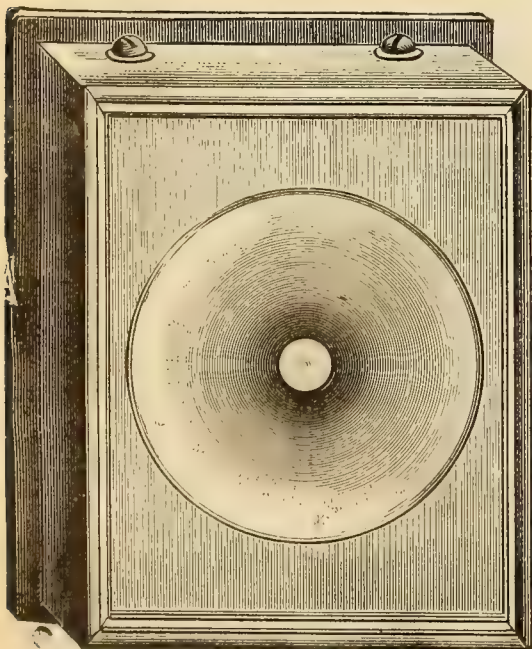
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FRENCH BATTERY  
RELIEVES  
RHEUMATISM  
AND ALL  
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Supersedes all others.  
Send for circular.**

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We have on hand a lot of best makes, which have been overhauled and polished. They are as good as new, and we will sell them very cheap.

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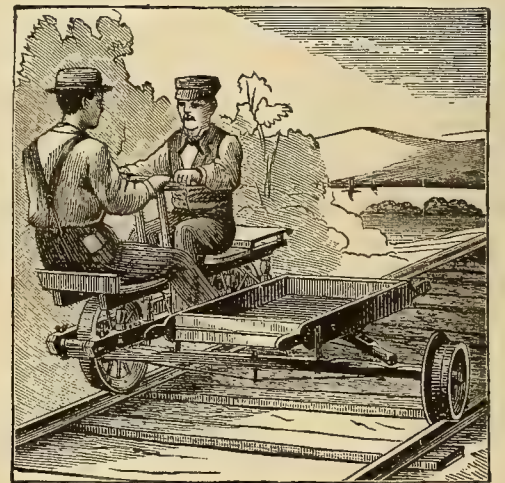
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MANUFACTURED BY THE

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For Magnets, Telegraphs, Telephones, etc., Insulated on the Bare Wire with **H. Splittorf's Patented Liquid Insulation, covered with cotton or silk.**

All sizes of **BARE AND COVERED WIRE** in stock. The Conductivity of every bundle tested and warranted.

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PATENTED APRIL 26, 1881.

The Only Reliable Substitute for the Costly Electric and Magnetic Telephones.

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SOLD OUTRIGHT AT MODERATE PRICES.

They transmit Conversation, Music, Signals, Commercial Orders, or any audible sound with almost electric speed and surprising fidelity. The tones are clear, natural and distinct; every word is easily understood.

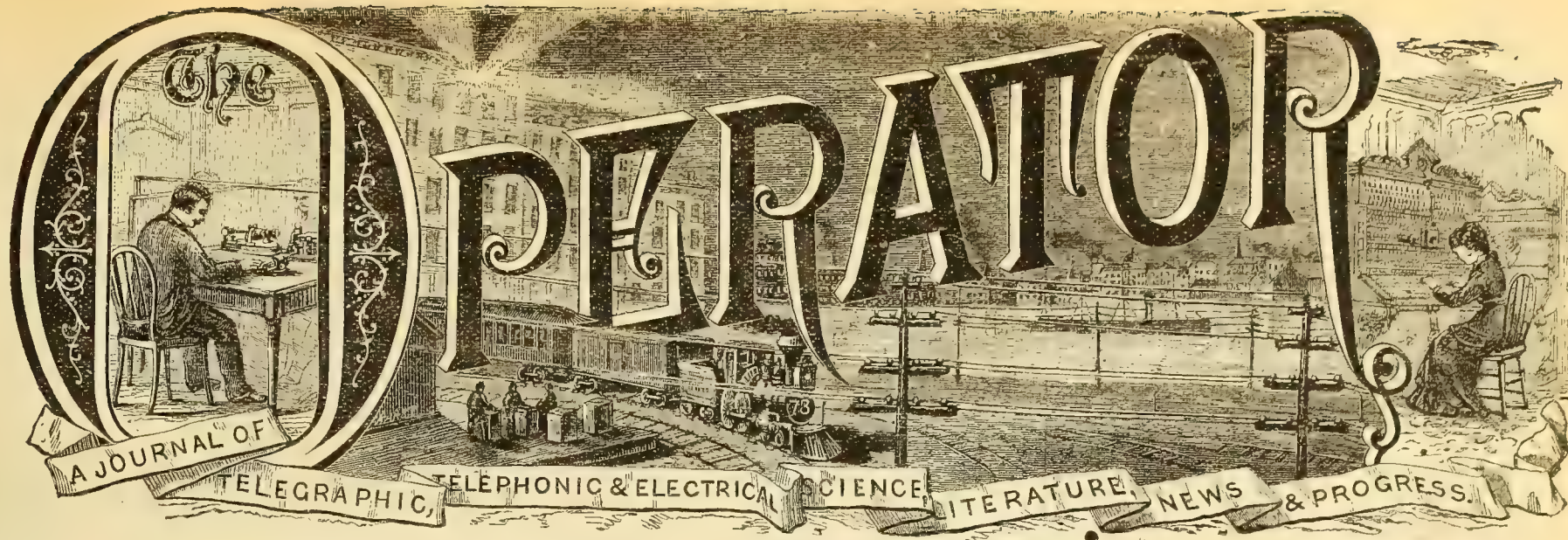
These instruments work well in all kinds of weather, and may be relied upon for effective service at all times. They are complete in themselves, and are perfect and durable in every part. Elegantly finished. Warranted to work two miles; *Reliable and efficient.* Price, \$10 per set *net.* WIRE.—With these new Telephones we use Galvanized Steel Cable Wire of great strength and conductivity. It does not stretch or break, and makes a very permanent line. PRICES: Double wire for short lines, 3 cents per rod, by express; *treble* wire for long lines, 5 cents per rod, by express. Metal Insulators, 5 cents each.

**\$4.00 Telephones.**—We also furnish the Improved Automatic (Patented) Telephones for short lines. They work excellently, and are certainly the best telephones for the price now made. Price per set, \$4.00 *net.* Wire for these Telephones, 3 cents per rod, by express. Insulators, 3 cents each.

Illustrated descriptive circulars, testimonials, etc., sent free on application. Correspondence solicited. Terms, cash with order. Address all orders to the Patentees and Proprietors,

**J. R. HOLCOMBE & CO., Mallett Creek, Ohio.**  
[Mention THE OPERATOR.]





VOL. XII.—No. 19.

NEW YORK, OCTOBER 1, 1881.

{ ONE DOLLAR A YEAR.  
5 CENTS PER COPY.

### THE SONG OF THE CARBONS.

[The universal physical law of molecular vibration well illustrated in the carbon pencils of the electric arc-light used in some of the largest lighthouses. The molecular stir set up in the armatures of the dynamo machines by rapid magnetization and demagnetization is transmitted to the carbon points of the lantern and reappears as a distinct musical tone.]

A weird, sweet melody, faint and far,  
A humming murmur, a rhythmic ring,  
Floats down from the tower where the lenses are;  
Can you hear the song which the carbons sing?

Millions of æons have rolled away  
In the grand chorale which the stars rehearse,  
Since the note, so sweet in our song to-day,  
Was struck in the chord of the Universe.

The vast vibration went floating on  
Through the diapason of Space and Time,  
Till the impulse swelled to a deeper tone  
And mellowed and thrilled with a finer rhyme.

Backward and forward the atoms go,  
In the surging tide of that soundless sea  
Whose billows from nowhere to nowhere flow,  
As they break on the sands of Eternity.

Yet through all the coasts of the endless All,  
In the ages to come, as in ages gone,  
We feel but the throb of that mystic thrall  
Which binds, responsive, the whole in one.

We feel but the pulse of that viewless Hand  
Which ever has been and still shall be,  
In the stellar orb and the grain of sand,  
Through Nature's endless paternity.

The smile which plays in the maiden's glance,  
Or stirs in the beat of an insect's wing,  
Is of kin with the North-light's spectral dance,  
Or the dazzling zone of the planet's ring.

From our lonely tower, aloft in air,  
With the breezes round us, tranquil and free—  
When the storm rack pales in the lightning's glare,  
Or the starlight sleeps in the sleeping sea—

We send our greeting, through breathless space  
To our distant cousins, the nebulae,  
And catch, in the comet's misty trace,  
But a drifting leaf from the tribal tree.

The song we hum is but one faint sound  
In the hymn which echoes from pole to pole,  
Which fills the domes of Creation's round,  
And catches its key from the Over-Soul!

And when it ceases, all life shall fail,  
Time's metronome shall arrested stand;  
All voice be voiceless—the stars turn pale—  
And the Great Conductor shall drop his wand!

### The Congress of Electricians at Paris.

[From The Operator's Special Correspondent.]

The Electrical Exhibition may now be said to be fairly opened, although even at this late day there are a few exhibits not yet installed.

That most conspicuous by its absence is Edison's great machine, which everyone has been looking

for and inquiring about for the past month. We are assured by those who ought to know that it is now on the way, and much interest is manifested regarding it and the wonderful things it is going to do, all of which I hope to be able to touch upon in my next.

The Brush Company has on exhibit the largest electric lamp in the world, giving, it is claimed, 150,000 candle power of light, and requiring the current from one of their largest generators, driven by a 30 horse-power engine. When the current is on full head its passage between the carbons (which are two inches in diameter) makes a deafening noise, while the light is almost blinding. A use has not been suggested for this electrical monster, and it remains silent and dark in its corner, seeming to envy its smaller fellows, who are more fortunate, inasmuch as they are more useful. It is understood that the Brush Company has just sold its rights for France, and a fabulous sum is mentioned as the price. The Credit Lyonnais are the purchasers.

The Maxim light has not been very much of a success so far. The engine used for driving its generators was badly placed and produced a poor light, which it would not do to exhibit where there is such hot competition. After a few nights' experience it was decided to suspend entirely and rearrange the machinery. At present the rooms formerly lighted by Maxim are lighted by Weston lamps.

The Congress assembles on Thursday next, and the jurors will immediately get to work making their tests and examinations, and, later on, awarding the prizes. We Americans, with our usual innate modesty, are making no claims yet and keeping quiet on what we have to show, but this does not keep us from thinking that we are going to carry off the lion's share of the awards all the same.

The following is the full programme of the Congress:

The Congress will be divided into three sections, comprising: First, physicians, chemists, physiologists, and, in general, persons who study electricity from a theoretical point of view. Second, telegraphists and engineers of railroad telegraphs. Third, electricians and engineers engaged in other applications of electricity, civil or military. Members of the Congress may belong to the several sections. The sessions will be held at different hours so that all may take part.

The sessions of the Congress will comprise: First, full sessions devoted to the discussion of questions of an international character, and requiring a vote of the Congress. Second, sessions devoted to the illustration and discussion of questions having a special interest on which an exchange of views and information will be use-

ful. Third, public sessions, in the form of conferences, at which will be illustrated, by such members of the Congress as desire, some of the questions of interest at the time.

FIRST PART.—Full sessions; general questions submitted to the Congress:

#### 1. Electric units:

The necessity for the general adoption of an international system of electrical measures; the choice of the unit system to be adopted and the denominations to be used; what measures to be taken for the establishment, preservation and reproduction of international standards; is it not necessary to constitute an international commission for this purpose? could this commission not be attached to the International Bureau of Weights and Measures?

#### 2. International telegraphy:

What measures to be taken to facilitate the service of international lines; means to assure the use of the same terms and units for the designation of the elements that influence the working of international lines; is it not possible to organize an international study of earth currents? Agreements regulating the laying of submarine cables in cases of juxtaposition or crossing; the establishment of distinctive signals and rules of navigation for the use of vessels laying or raising submarine cables.

#### 3. Divers applications of electricity:

What measures to be taken to facilitate international relations concerning certain special applications of electricity. (The solution of these special questions will be aided by the discussion that will have taken place in the different sections.) The electric light—measures to be taken to facilitate the comparison of luminous intensities. Electro-physiology—measures to be taken to facilitate a comparison of results obtained in the employment of electro-medical apparatus. Lightning rods—measures to be taken for the compiling of statistical information regarding the efficiency of the different systems of lightning rods now in use.

SECOND PART.—The sections. Special questions for the exchange of useful ideas:

First Section.—Theory; sources of electricity; lightning rods; electro-physiology.

1. Questions concerning the theory of electricity. 2. Relative to the measurement of constant or alternating currents of great intensity. 3. Concerning the constitution of the globe: atmospheric electricity and terrestrial magnetism. 4. Lightning rods; discussions on the best conditions for establishing lightning rods; is it possible to compile a table of international statistics on the value of different systems now in use? 5. Questions concerning electro-physiology: the necessity for defining in a scientific way the currents used in medical operations, and to attach to them a measure of electric units: the best means to be employed to determine the nature of electrical phenomena produced upon animals. 6. Other questions reserved for introduction by members of the Congress.

Second Section.—The transmission of signals and speech by electricity, telegraphy, telephony, railroading.

1. Questions concerning telegraphy; compari-



son of batteries and instruments; the best means for establishing overhead, underground and submarine telegraphs, regarding their conductivity and insulation; advantages and disadvantages of the employment of relays and long lines; the use of lightning rods and arresters on telegraph wires; their advantages and disadvantages. 2. Questions concerning telephony; the special difficulties to be overcome in the establishment of telephonic lines; the causes of the noises heard on telephone wires. 3. Questions concerning railroads; the application of electricity for the greater security of railroads; comparison of the different systems of automatic and other signals. 4. Other questions reserved for introduction by members of the Congress.

**Third Section.**—Industrial applications of electricity.

1. Questions concerning electric lighting; the measure of luminous intensity by electrical means; comparison of different photometric processes; the need of an absolute unit for the measure of luminous intensity; does there exist a measure that can be recommended as an international standard? is it possible to establish simple rules for photometric measurement? comparison of the results obtained from constant and alternating current generators; special conditions for the application of the electric light to cities, factories, mines, dwelling houses, lighthouses, vessels, etc. 2. Questions concerning the transmission of power to a distance by electricity; the employment of electricity for transmitting power, know facts, results obtained, difficulties to solve; the utilization of natural forces by means of electricity; divers applications. 3. The distribution of electricity for industrial purposes. 4. Electric clocks and chronographs; registering apparatus and instruments of precision; geodetic measurements. 5. Electro-metallurgy and applications of electricity to chemistry. 6. Other questions reserved for introduction by members of the Congress.

**THIRD PART.**—Public conferences Among the questions to be treated in the public conferences the Commission gives special notice of the following: 1. Electric measures. 2. Electric lighting. 3. The transmission of power by electricity. 4. The telephone and its applications. 5. Atmospheric electricity and lightning rods. 6. Terrestrial magnetism.

It will be seen from the above that the discussions will have a wide range, and the decisions arrived at by such a body of scientists will be exceedingly valuable.

Mr. Marcel Deprez, the well-known French electrician, is installing an exhibit by which he will illustrate an entirely new method for the division and transmission of power. He uses a single Gramme machine for a generator, which supplies him with enough electricity to run twelve or fifteen small motors, and each motor has power enough to drive a sewing machine, a scroll saw, a pleating machine, or any such small piece of mechanism, and he throws all, or only one, into circuit without changing the speed of any. This beautiful result is attained by some system of electric regulator or governor attached to the generator, which increases or decreases the power of the field magnet, according to the quantity of current required. The governing portion of the apparatus is entirely electric, but its mode of working has not yet been made public, and will not be until it is ready for exhibition. The journal *La Lumière Electrique* is to be printed in the exhibition building by presses run by these motors.

It is curious to notice how far behind the age the people in France, and, in fact, all over Europe, are in regard to telegraphy. In England the sound system is being very slowly introduced, but in the other European countries it is *against the law* to receive by sound. The old cumbersome registers that we used and shelved years ago are employed, and they cannot or will not see that they are behind the times. It is not generally believed that American operators can send or receive 35 and 40 words a minute by sound,

and there is unfortunately but one practical operator here or an exhibition might be given. Some steps have already been taken to have two or more really first-class American operators come to Paris to give an exhibition of what is done on the other side of the Atlantic, and one gentleman, who is going into the instrument manufacturing business here, has offered to pay half the expenses provided another can be found who will pay the other half. Your correspondent has some reason to believe that the other half will be forthcoming.

#### Review of the Past Two Weeks.

The past fortnight has been remarkable for the continued fierceness of the terrific onslaught from outsiders upon the Western Union. The condition of the employes has in the meantime been improved, if anything; and, as the latter class has little concern with the grievances of the general public, the whirlwind of criticism has blown exclusively from the latter quarter. No attempt to reduce salaries or increase hours of labor has been made since our last issue; extra services have been fairly paid for; and, altogether, the danger to operators, if any exist, seems to be entirely prospective. For so much we have to be thankful, though not forgetting the time-honored injunction about eternal vigilance.

The New York *Herald* seems to have established a permanent column for discussing "Defective Telegraph Service." These daily examples, if true, are disgraceful to the service. Thus (*Herald*, Sept. 17), one man, in New York, writes that the Western Union after losing his message "tried to collect seventy-three cents from my wife, and upbraided her because she refused" to pay it. A Wilkes-barre, Penn., man writes (*Herald*, Sept. 23): "A few days ago I received another gentleman's dispatch done up in my envelope. Not long since a dispatch came to me which I couldn't read at all, on account of its being blurred and so badly spelled, and I was compelled to leave my office and walk quite half a mile to their office in order to get it deciphered. On Monday last a dispatch was handed to me by a messenger boy at ten minutes past six P. M., which had been received at the telegraph office at fifteen minutes after two, and when I asked the boy the cause of the delay he replied, 'Guess it was forgotten.' That delay will probably cost me over a hundred dollars." The *Herald* then, editorially and in its Wall street reports, indorses these criticisms. "Since the consolidation swindle," it says in its issue of Sept. 17, "and the passage of the united lines under Mr. Gould's control, the service has simply been allowed to go to the dogs. From being an instrument of public service, Western Union is being used as a jackscrew to the rest of the market. When Mr. Gould desires a rise in prices he intimates it by screwing Western Union up; when he desires a decline he twists it down. Consequently this great telegraph company, from being of utmost importance as a popular convenience and necessity, has been reduced to the level of a stock-gambling machine, which Mr. Gould is driving for his own special gain and convenience. To keep the price up and pay dividends upon a stock which has been inflated to the point of bursting, it has been found necessary to cut and carve expenses in every direction. Salaries have been reduced, first-class operators have been shown the door and their places have been filled by cheap and incompetent substitutes." Then it adds, editorially: "First-class operators have been driven from their positions by reductions of salaries, poles and wires have been allowed to go to ruin, country offices have been squeezed out of existence, and the whole service has been allowed to drift into a condition of disability that creates universal disgust. All this to permit Mr. Gould to earn a dividend upon the inflated stock of which he is the proprietor. Unfortunately for Mr. Gould, all this lopping off and trimming down of expenses is not sufficient to screw out from the current earnings the necessary dividend. To provide for the deficiency and to make things pleasant, some hundreds of thousands of dollars of the company's assets have been sold and the proceeds

turned in to the credit of the dividend account."

The complaints from the country at large are also very bitter, the following from the Dallas (Tex.) *Herald*, of Sept. 11, being a fair specimen of the charges made: "We are compelled again this morning to ask the indulgence of our readers for the scarcity of telegraphic matter. We have complained and continued to complain of the treatment we are receiving from the Western Union Telegraph Company, and not only is this the case with us and with the merchants of Dallas, but it is true also with the merchants and with the press in Fort Worth."

The San Antonio *Express*, referring to the above, says: "It would pay the company to stretch more wires and make fewer dividends for the next year or two."

The St. Louis *Globe-Democrat* says the service in that city is "thoroughly bad." The newspaper service is "wretched," while the commercial service is "actually detrimental to the city's commercial interests."

Of course, this has been very annoying to the managers of the Western Union, but it seems to have acted as a stimulus to enterprise.

The *Sun*, of this city, in its issue of Sept. 19, gives the following as an interview with a gentleman intimately connected with Mr. Gould: "When Gould saw Friday's *Herald* he became perfectly mad, he damned Bennett, damned Vanderbilt, damned Keene and everybody around him besides. I never saw him in such a rage before. The *Herald* has upset his whole programme. He evidently intended to sustain the market by putting Western Union up to par, and quietly sell it out with some other stocks meanwhile. Bennett's attack broke the plan all up. He had to buy the general list for the sake of sustaining the price of Western Union. When he cooled down a little he ordered Washington Connor to send word to Charley Minton, the financial editor of the *Herald*, to come and have a chat with him. But the answer was that Mr. Gould had to go to chat with Mr. Bennett, if he wanted to chat on the subject of Western Union. Gould got mad again, and gave additional orders to sustain the general market." Since we have no desire to place Brother Jay in such a shockingly bad light before the public, we must repeat that the foregoing statement is from the New York *Sun* of Sept. 19.

But, perhaps, the unkindest cut of all came in an official communication from the President of the Produce Exchange, as follows:

NEW YORK PRODUCE EXCHANGE, }  
NEW YORK, Sept. 16, 1881.

Gen. Thomas T. Eckert, General Superintendent  
Western Union Telegraph Company:

DEAR SIR: Very serious complaints are being made to me that the facilities for transmitting telegraph dispatches between this Exchange and the West are entirely inadequate for the volume of business now being transacted. I desire to call your immediate attention to this matter, and to respectfully request that such additional wires and other facilities may be provided as shall promptly meet the requirements of the members of this Exchange. Respectfully yours,

F. H. PARKER, President.

To this General Eckert sent the following reply:

WESTERN UNION TELEGRAPH COMPANY, }  
NEW YORK, Sept. 17, 1881.

F. H. Parker, Esq., President Produce Exchange,  
New York City:

DEAR SIR: I am this morning in receipt of your letter of yesterday, which, however, first came to my notice in the newspapers before I reached my office. Permit me to say that I can hardly consider your course in publishing such a document before it was possible for you to receive a reply to it consistent with commercial courtesy. I shall, therefore, endeavor to give similar publicity to this letter, that the company may be saved from the reflections the unqualified terms of your complaint are calculated to throw upon it. The facilities of this company for the transmission of dispatches to and from the West are more than adequate to the demands of ordinary business. But the delays which have occurred during the last few weeks have been due to three causes, which were entirely unforeseen, and against which it was impossible for us to make immediate provision, viz.:

**First**—The attempted assassination of the President created a demand upon us throughout the country to which it became our duty to give the first attention. So great has this demand been that the company has transmitted about 2,000,000 bulletins (equivalent to 4,000,000 messages of average length) since the 2d of July last. And I presume the most captious will hardly complain because we have made so great an effort to assuage the anxiety of the people at large during a most terrible national calamity.

**Second**—The forest fires in the Middle and Western



States have caused continual interruptions to our wires, in some instances prostrating all our trunk lines and cutting us off from any communication with Chicago and other Western produce markets. The authentic reports of the devastation those fires have made in the localities through which our lines pass give sufficient evidence of the difficulty we have had in coping with troubles entirely beyond human control.

**Third**—The increase in the number of commercial messages has been far beyond the natural growth of business expected, being more than 50 per cent. above that of the same season of any year in the company's history, and far beyond any reasonable anticipations. This enormous increase is pressed for immediate transmission during about five hours of the business day, and the very prompt service the company has been rendering has so increased the exactions of that class of customers that nothing short of immediate transmission will avoid complaint.

The first two of these causes are entirely temporary, but, combined with the third, have made a demand upon us of such magnitude that no provision the Western Union Telegraph Company could have made would have been sufficient to insure the same precision in its business as under other circumstances. We are, however, making every effort to transmit our messages with the utmost dispatch, our employes are rendering faithful and efficient service, and our facilities are being so increased as to make ample provision for any requirements of the public; the erection of about 10,000 miles of new wire having been commenced in the early spring, and as much more has since been undertaken in consequence of the extraordinary demands. We are pushing this work with all the energy possible, and in view of the circumstances above recited, and of the fact that to erect wires for distances so great, for example, as between Chicago and this point, is a work of time, I have no doubt we shall receive from the public at large, and from all business men especially, a reasonable degree of consideration.

Yours respectfully, THOMAS T. ECKERT,  
Vice-President and General Manager.

Gen. Eckert said to a reporter that for the two million bulletins mentioned in the foregoing letter the company did not receive a cent; he was very glad to do it gratuitously for the public, and that if those bulletins had been charged for at only one-half the regular commercial rates they would have realized over half a million dollars.

President Norvin Green said: "There is not a word of truth in any of these stories of the discharge of operators by this company from motives of economy. The only discharges made have been for incompetency or some other equally good cause. So far from discharging men, our executive committee met to-day and approved of the appointment of a large number of operators. We are working more operators now than we ever worked before, and still we are employing men as fast as we can get them. I would be afraid to tell you how much we are in need of operators."

The New York World, which—rightfully or wrongfully we cannot say—enjoys the reputation of being Mr. Gould's personal organ, steadily defends the Western Union management; accuses the Herald of entertaining base motives, and even quotes the statute bearing upon certain libels, all for the benefit of the Herald.

The result of the two weeks' campaign may be summed up as follows: Western Union at the date of our last issue, 92¼; Western Union to-day, 86⅞.

The last financial report of the Western Union Company will be found in another column.

With regard to the opposition companies it may be said that the prospects for them all, except, possibly, the alleged "Postal Telegraph," are decidedly encouraging. The Mutual Union, which is displaying astonishing vitality, has secured the services of Mr. James Gamble, late of the Western Union, as General Manager. That company expects to be open and well established at all important points some time during this month. In this connection Mr. Rufus Hatch recently said, very pithily, "If the little American Union, only in existence less than eighteen months, could reduce the price of Western Union to 77 on \$40,000,000 of capital (in the trial before Judge Truax one of the Western Union's officers swore that the American Union was cutting into them so deeply that they would have to pass their dividends), a moderate use of the rule of three and simple proportion will show what the effect will be on double the capital of Western Union with the Mutual Union at work." The Mutual Union expects, furthermore, to open to Chicago with no less than 16 wires—possibly 20—and add to these as fast as needed.

Mr. George W. Ballou, one of the principal members of the company, said that the entire line between New York and Chicago, by way of Albany, Buffalo, Cleveland, Toledo and Detroit, would be completed and opened for business by the 15th of October, and that another line would soon connect Boston with Albany via Springfield, Mass. He said, further, that a contract has been made with the Chicago & Milwaukee Telegraph Company for the use of their lines between Chicago and Milwaukee, and it is expected that the new lines which are being built between Milwaukee and St. Paul and Chicago and St. Louis by the Mutual Union Telegraph Company will be finished simultaneously with the line from New York to Chicago. The Canada Mutual Telegraph Company is building lines to all the leading cities in Canada, which will be finished this year and will be amalgamated with the Mutual Union system. Mr. C. R. Hosmer, late superintendent of the old Dominion, has resigned and taken entire charge of the Canada Mutual Company. Arrangements have been made with the Baltimore & Ohio for an interchange of business, which will give the Mutual Union Company all the 220 offices of the Baltimore and Ohio.

A contract for a term of years has been made between the Eastern Railroad Co. and the Mutual Union, whereby the latter secures the right to construct and operate lines of telegraph along the main line of the road and all its branches. Nearly 4,000 heavy cedar poles on platform cars are now at the different sidings ready for distribution, and work is to be pushed at once by large gangs of construction men. Three gangs have started at the Portland end, building east to Bangor and intermediate points. Supt. Hern has arranged for suitable office locations, etc. The Mutual Union lines west, via Worcester and Springfield, are also being vigorously pushed to completion.

At the last monthly meeting of the Directors of the Baltimore & Ohio Railroad Company the president stated that the telegraph system of the B. & O. Co. already extends over a territory of 2,159 miles. It owns and operates over 11,000 miles of wire, and interchanges business beyond its own lines with many existing telegraph organizations. In view of the growth and magnitude of the express and telegraph systems of the Baltimore & Ohio Company, the organization and promotion of the interests of which require continuous supervision to insure their effective development and increased usefulness, the President stated that it had been deemed desirable to obtain the services of a general manager of the express and telegraph systems of the company. He, therefore, nominated for this office Mr. Geo. P. Frick. The nomination was approved and the appointment made.

The Western Union seems to have got its lawyers and wood-choppers at work again, in the old familiar methods of fighting the opposition. On the 21st ult., at Baltimore, its solicitor filed an amended bill in the suit against the Baltimore & Ohio Railroad Company in the United States District Court. The matter in controversy is in relation to the right to control and operate the telegraph lines along the lines of the railroad company between Baltimore City and Wheeling, W. Va., and has been going on under various forms since 1877. The Western Union Company contend in their bill that, under various grants and purchases, they had acquired the sole right to maintain and operate telegraph wires for general business along the line, and that in 1877 the Baltimore & Ohio Railroad caused the lines of the company to be disconnected, and deprived them of the right to carry on the telegraph business under their contracts. They ask relief in equity, and pray for an injunction to prohibit the Baltimore & Ohio Railroad Company from maintaining and using the line of telegraph between Baltimore and Wheeling; also from preventing the Western Union Company connecting its line with the wires of the railroad company, and establishing telegraph stations at any point on the line, and finally, from contracting with any company other than the Western Union Company for the use of the said wires for the purpose of carrying on the business of telegraphing.

A letter to the N. Y. Herald, dated Sept. 21, says: "On Saturday last a party of five telegraph linemen drove from Flemington, N. J., toward Whitehouse, over the route of the Bankers and Merchants' Telegraph Company and

chopped down thirty-eight of their poles. This is the third raid that has been made on the property of this company, and four men in the employ of the Western Union Telegraph Company are now held to bail for the different cuttings. The bail in each instance was furnished by officers of the latter company, or Telephone Company, both being identical in interest."

Other pole-cutting outrages are reported; but, as the Western Union officials intimate that these new companies saw down their own poles for the purpose of creating public sympathy, we shall have to await a judicial decision in the case of those under arrest.

### An Excellent Suggestion.

To the Editor of The Operator:

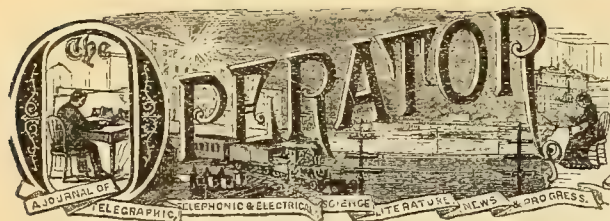
SIR: Your correspondent desires in this letter to offer a few words upon a subject, the great importance of which he believes will at once become manifest to all operators whom it may reach, and he hopes that every operator in the land will be led to seriously consider the suggestions here to follow:

The new opposition telegraph companies have now reached that stage in their construction where they are venturing to open to the public their facilities for business, and are just making known their requirements for the best operating talent that the country affords. Already a few operators have been induced to leave this office, at a trifling advance of salaries. It is too apparent that we are to have the old story over again, of a general stampede to the "opposition," with entirely insufficient inducements to warrant such a movement. The argument against these hasty changes may be briefly put. The best operators are now, with some exceptions (among them those engaged in other pursuits), employed by the Western Union Telegraph Co., and nearly every one of them is necessary to the tolerable transaction of its business. In view of outside demands, then, does it not seem that the time is at hand when all "first-class" operators should exercise some business forethought in estimating the value of their services—when such men should have something to say about establishing that value, by placing themselves in a position where, by the natural order of supply and demand, there will result a compelled acknowledgment thereof? A "first-class" operator should be understood as one who has, by native sound sense, by long and careful practice, become rapid, correct and reliable in the performance of his duties. Reliable, not only in his ability to read bad copy and all the various combinations of bad senders, and to return as good as he receives, but also reliable in his habits of appearing regularly at his allotted post. To all such your correspondent would urge most earnestly that they do not entertain any offer from an "opposition" company of a salary less than one hundred dollars per month. (The figure should be 125.) The studious labors of half a lifetime in a business of most vital and far-reaching importance, involving questions of life and death, and frequently the possession or loss of millions in treasure, entitle you, certainly, to the very moderate and modest return for your services of the price above noted. You now have it justly within your power to thus promote your own material interests, as well as the interest of others of the craft, for the placing of maximum salaries upon a higher and fairer plane will, of course, stimulate the lower grades to commendable and more careful efforts in improvement; it will discourage evil-doers, and, too, there will be recalled most of the first-class talent, now stationed at unimportant posts, or retired in less important callings; the condition of the service of all telegraph companies will receive a healthier tone and an efficiency they have not heretofore known. BON SORR.

CHICAGO, Sept. 24, 1881.

The section of the Brazilian submarine cable from Para to Cayenne is useless, owing to the destruction of its insulation by fish bites. These bites take place only within a distance of forty miles skirting the coast of an island in the estuary of the Amazon. Examinations show that the cable is attacked by some powerful fish, whose jaws crush the iron sheathing of the cables and displace the insulating substance.





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### UNTO THIS LAST.

Since our last issue our stainless, ill-starred President, James A. Garfield, has passed away, seemingly at the high noon of his life, and after eleven weeks of unimaginable suffering. In common with other universally expressed marks of affection and profound regret, the Western Union Telegraph Company has formally deplored his loss, and directed that its principal offices should be draped in mourning.

This distinguished scholar and most amiable gentleman—the child of poverty and hardship, and now among the greatest of our noble host of great men—is endeared to us, as telegraphers, by even closer ties than to the general public, since he is remembered by us as one of the earliest friends and most staunch supporters of the electric telegraph. His fervid recognition of the late Professor Morse, and the utility of the telegraph in general, expressed in his admirable speech at the Morse Memorial Meeting in the hall of the House of Representatives, at Washington, April 16, 1872; and, later, his eulogy upon Professor Henry, together with the glorious memories which he so skillfully clustered around those illustrious Americans, couched in “words that burn” and must forever go whirling down the ringing grooves of time, are still fresh in the memories of us all. From the contemplation of these memorable orations we had come to regard him as the especial champion in Congress of the telegraph and telegraphers, and recalling now his fervid interest in all that pertains to our honored profession, his terrible death at the hands of a miserable, good-for-nothing, skulking assassin is made doubly shocking. We who, day and night, for months past, have wrought and toiled, literally by his bedside, have, perhaps, more than the general body of our citizens, acquired from this close connection a deep interest in the illustrious dead. We were the witnesses, just after his inauguration, of the dutiful son’s kiss imprinted on the trembling lips of his aged mother; we have copied and recopied for many an hour the letter which, when Death had almost palsied his fingers, he wrote to that devoted mother; we saw and copied his prophecy, “Strangulatus Pro Republica,” written at the same time and by the same weary hand; the affectionate embraces between the dying husband and the noble wife, father and child, and in all we have learned that he who for so long had taught us to live could better teach us how to die. James A. Garfield—soldier, statesman, orator and typical Christian—may he rest in peace!

A HALF million dollars is not a mean capital for a young man to start life on; yet this is what Mr. Jay Gould puts down for his son, George J., twenty-two years old, to start in business—“business” is the respectable name for it in Wall street. But half a million dollars is nothing besides the education such an honorable sire can give him. Let the promising youth study up the Black Friday scheme; let him read the sanctimonious life of James Fisk, Jr., his father’s late lamented partner; let him study how to stand up in a court of law and, “with a broad smile,” that speaks only of pitiless malignity toward the luckless victims, proclaim himself one of the “early birds.” Truly, young Gould has yet much to learn, but he’s on the right track. Then, the noble father has put into this model firm, as full partner, that great truth-teller and patriot, Giovanni Purissimo Morosini. This is, of course, to have him handy in case it should be necessary for anyone to go into a court of law, and there, with uplifted hand and on solemn oath, swear that his name is Giovanni, not George; that he is treasurer of the firm of Connor, Morosini & Gould; that he has held that office since the organization of the firm; that he hasn’t got the books of the firm; doesn’t know where they are; never saw them; never made an entry in them; never kept any account at all; never received any money; never signed any checks; never had any duties as a member of the firm; never received any of the profits; that he knows absolutely nothing about the firm; that he doesn’t know who set him up in business; and, while he will swear it was one of the firm, he has quite forgotten who are the members of his firm. Yes, indeed, the kind and indulgent father has set the tender youth up in a fine, paying business, with some exceedingly unsophisticated and sweet-scented æsthetes for partners. Let us wish him good luck.

DURING the late President’s long sickness the Western Union transmitted from Long Branch alone an average of 100,00 words of press matter per day, independently of Government and private messages, and on the day of his death Long Branch sent 225,000 words of press alone. When we reflect upon the magnitude of this labor, and the enormous telegraphic business transacted elsewhere, it seems hardly credible that in America, only half a century ago, a man was indicted for conspiracy for merely proposing to build a telegraph line.

In *Telegraphic Tales and Telegraphic History*, on page 20, will be found the following paragraph:

“Harrison Gray Dyar in 1823 constructed a telegraph line on Long Island, supporting his wires by glass insulators fixed on trees and poles; the electric signals printed themselves upon litmus paper, the spacing of the mark indicating the letters and other signs. Just as Dyar and his partner Brown were seeking capital to set up a line between New York and Philadelphia (in 1827), a blackmailing agent, failing to extort the concession of a large share in the enterprise, obtained a writ against the two partners on a charge of conspiracy to carry on secret communication between the cities! The case was never brought to trial, but the enterprise was blocked.”

The legal proceedings so frightened them that Mr. Dyar fled from New York, and in 1828 left the United States and made his home abroad. Next Wednesday completes but forty-four years since Professor Morse, Oct. 5, 1837, filed his caveat in Washington for his great invention.

NOTHING could afford us more lively satisfaction than to call wide attention to the timely

letter of our esteemed correspondent at Toledo, Mr. J. M. Cronenberg, asking for the establishment of a telegraphers’ contingent to the Cyrus Field subscription for the family of the late President Garfield, to be known as “The Telegraphers’ Twenty-five Cent Garfield Fund.” Since the original fund was inaugurated by a telegraph man—Mr. Cyrus W. Field—it is meet that it should be closed by the telegraphers in general. After having the Chicago telegraphers’ resolutions of condolence telegraphed over the country, and in some cases sneered at—though devotion like that cannot be sneered at—we have now a chance to give a substantial exhibition of our earnestness and sincerity. Remembering the lively interest of the dead President in everything telegraphic, from his earliest days in Congress down to the last moment, when his great heart broke, we must accord profound respect and the tenderest pity to his bereaved family. The womanly grace and stoical courage of that noble wife should not pass unnoticed; and now, when the shadows of her life are falling and lengthening toward the East, with her children still young and comparatively unprovided for, with their estimable father cruelly butchered, and she crushed under the tremendous load of grief, to provide forever against the tinge of poverty is to bring rest and, in a measure, contentment to the weary mind of that noble woman, Lucretia Garfield.

THE American cable, which was opened for business only a little over a week ago, is already broken. The break is believed to be in deep water, and Mr. Bates is reported to have said that the officers of the company know about where it is, but that he “does not care to mention the locality.” He furthermore thinks the interruption is “very strange.” Of course it was very strange. What has Jay Gould ever done that was not very strange? When the American Cable Company opened for business a couple of weeks ago, after a grand flourish, and charged for the same service fifty per cent. more than the existing cable companies charged, everybody thought it was very strange. And when this unexpected action of the American Cable Co. surprised the “lambs,” and the stock of the Anglo-American Company, which Mr. Gould had been quietly buying in, was greatly enhanced thereby, all the victims thought it was very strange. Then, the sudden breaking of the cable was very strange, as Mr. Bates is reported to have said, and for the benefit of the new firm of Connor, Morosini and Gould junior, we make these little explanations. It is all very strange.

WE should deeply deplore the establishment of the truth of the allegations of pole-cutting made against the Western Union Company in New Jersey, although we believe that the witnesses to the alleged outrages are themselves no strangers to such dastardly business. If true, the charges are only an example of the other man’s ox being gored; but, owing to the high personal character of those officials of the Western Union accused of the crime, we are very loth to circulate or give credit to the stories. If poles have been cut by over-zealous linemen, we hope that they will be severely punished, and that the officials on both sides will leave such wild enthusiasts to the fate which such Nihilistic practices merit. Such a ruffianly style of “competition” is second only in wickedness to throwing dynamite into each other’s offices; and, if one man may saw down another’s pole at dead of night, there is no logic to prevent the other from hiring



Leo Hartman, O'Dynamite Rossa and Guiteau to "compete" in his behalf. We want broad daylight, fair play and free competition—no pole-chopping.

"NOT since that midnight thirty-one years ago, when the toll of bells announced that the hero of Palo Alto had been vanquished by death, have sounds of such import as those of last night been heard. President Harrison died at 12:30, and the people did not learn the fact until the following morning; Lincoln's death, occurring at 7 in the morning, did not call for the midnight bell; and the toll that awoke the sleeping citizens on the death of President Taylor had far less significance in the territory and population which it notified than that of last night. By means of the vast extension of the telegraph all parts of the land heard almost simultaneously the news that President Garfield was no more. Never in the history of the world were intelligence and sympathy more quickly flashed through a whole nation, or the unity of the people in heart as well as in head more fully manifested."—*Boston Journal*.

WE have seen it stated that Postmaster General James intends, in his next annual message, to recommend the establishment here of a postal telegraph service analogous to that of Great Britain. It is not a year since we announced in these columns, upon the authority of Col. James himself, that he was opposed to any such scheme, so that if there be any truth in this rumor his opinions must meanwhile have undergone a complete revolution. Should he be found, under the present vile system of civil service, advocating any such new-fangled notion, it would temper our regret at, as now seems probable, his retirement from President Arthur's Cabinet.

THE President's death, of course, rendered it impossible to hold the Old Timers' reunion at Niagara Falls, as announced. Oct. 26 has now been named as the date. Several prominently connected with the Association are agitating a reconsideration of both the date and place of meeting, in favor of having the reunion take place in New York, at the time of the Mutual Benefit annual meeting in November. In this way many could kill two birds with one stone, and the telegraphers of New York would have an opportunity of extending their hospitality to their visiting brethren. We hope this change will be made.

WE are sorry to see that, in some Western papers devoted to the opposition, editorial articles published in THE OPERATOR have been grossly perverted and then quoted to prove that the recent bad service on the part of the Western Union was due principally to dissatisfaction, disloyalty and incompetence among its operatorial force. We have freely criticised the service as far as was just and necessary, but we never intended that our remarks should be doctored and used, with our name, for campaign purposes between rival companies.

THAT interesting kingling, Kalakaua—or whatever his name is—during a recent visit to Mr. Edison, in this city, remarked that he had a first-rate dynamo machine in his Polynesian home which burned a thousand million tons of coal a day, and the power of which was unlimited. He mildly suggested the laying of submarine cables, and pledged himself in that event to furnish power enough to light the whole of North America. He was referring to the famous volcano, Mauna Loa. It may yet ap-

pear that there was more than idle jest in the royal suggestion.

SHOULD the proposition to add a telegraphic contingent to the Mrs. Garfield fund prove popular with the members of our profession, we hope that everyone will be prompt in remitting. Each large office might appoint a treasurer, who can send us a list of the names and amount of subscription, which we shall promptly turn over to Mr. Field, or to any other responsible party named by the subscribers. One element is especially essential to the success of this scheme—if anything be done at all, it ought to be done at once.

AT an informal meeting of telegraphers, the proposed telegraphers' 25-cent Garfield fund was unanimously indorsed. Many of those present, however, were in favor of subscribing for a monument to the late President, while some were willing to subscribe to both funds. In view of this division of opinion, and of our own doubt on the subject, both objects being equally meritorious, those forwarding subscriptions will please state which object they prefer. We can then count the votes and act accordingly.

WE have heard nothing lately, by the way, of Professor A. Graham Bell's famous induction balance. That delicate instrument located the ball in the body of our late lamented President, indicating the front of the right side of the abdomen, just above the groin, as the precise spot. Yet, cold facts, the result of the autopsy, located the ball far away on the other side of the body, and in the back instead of in front. They had better sell out that stock of induction balances.

THE telegraphers can, if they so choose, astonish Mr. Cyrus W. Field with a considerable increment to the Garfield fund. If this idea prove popular, we shall be glad to acknowledge in these columns a full list, by name, of all the individual subscribers. This list, when completed—and to be effective it should be completed at once—ought to show the name of every telegraphic official, operator, lineman and messenger in the United States.

THE following is from the *World* of Sept. 16, a paper believed to speak for Mr. Jay Gould: "The ridiculous story of yesterday, relative to the sale of some of the company's (Western Union) assets, is said to have originated with a horse jockey who used to be a director of the company, and who seeks this means of revenge for having been given to understand that as a director he was neither useful nor ornamental. In plain English he was told that his room would be better than his company." Who can it refer to, anyway?

THE report of Western Union finances, made last month, looking at the revised figures as compared with the estimates made June 8, shows that they will have to do a tremendous business this fall to keep the actual net receipts anywhere close to the present estimates. According to the figures, that 1½ per cent. dividend was a close shave, but it is a dividend nevertheless, and we wish them much luck in earning more.

It is stated, upon the authority of the Western Union, that the earnings of that company have been for two months of the present quarter at the rate of 10 per cent. a year, and for the whole quarter will exceed probably the rate of nine per cent. a year. Should this prove true, there would be nothing inconsistent in a number of

underpaid and overworked operators respectfully asking for an increase of salary.

WHETHER it is owing to the enormous increase in the business, or to the introduction of so much superior American Union talent, is not easy to determine; but the fact of the matter is that for some time the number of errors in addresses, transpositions elsewhere, and general mutilation everywhere, has become astonishing and almost beyond belief. A halt, and then a retrograde movement in this respect, would prove beneficial.

THERE was what may be fairly called "enterprise" in the action of the *New York Herald*, which, when one of its specials was delayed at Sioux City, on account of the rush of business, offered to bear the expense of forwarding operators to that place from Milwaukee.

#### Exhibits at the Telephone Convention.

One of the most interesting features of the conventions of the National Telephone Exchange Association are the exhibits of the different manufacturers of electrical instruments and supplies.

The convention lately in session at Saratoga was no exception to this rule, and many valuable and useful articles of telephonic apparatus were shown.

The following firms made exhibits:

The Gilliland Electric Mfg Company, Indianapolis.

A. G. Day, New York.

Utica Fire Alarm Telegraph Co., Utica, N. Y.

Chas. Williams, Jr., Boston.

The Western Electrical Manufacturing Co., New York and Chicago.

Eugene F. Phillips, Providence, R. I.

The Washburn & Moen Manufacturing Co., Worcester, Mass.

The Electric Supply Co., New York.

Davis & Watts, Baltimore.

Post & Co., Cincinnati, O.

J. S. Ross, of Nashville, Tenn.

Law Telegraph Co., New York.

A. M. Young, Waterbury, Conn.

Other manufacturers and firms were represented, but did not exhibit.

The Electrical Supply Co., present by its agent, Mr. Theo. Mace, showed samples of lead protected electrical cables, the conductors of which were insulated by a fire-proof compound.

A. G. Day, of New York, the well-known kerite cable and wire manufacturer, was represented by General Agent Hotchkiss, and showed as samples some very fine specimens of armored cable, kerite-covered wires, anti-induction cables and kerite tape for covering wire joints.

The Washburn & Moen Manufacturing Company was ably represented by Mr. Henry M. Smith, and had a case upon exhibition showing the iron they use in various stages of its manufacture into wire, as well as its appearance after fracture.

Mr. Smith also distributed a number of copies of the "Pocket Handbook of Telegraph and Telephone Wire," which contains more solid meat and useful knowledge to the square inch than any book we know of.

Eugene F. Phillips, of Providence, so well and favorably known by all telephone men, was, as usual, promptly on hand, and exhibited many samples of aerial, underground and elevator cables, cordage and a large collection of cotton and silk covered office and magnet wires, together with the sample wire cards which are known as describing the Phillips wire "where'er the sun doth his successive journeys run." Mr. Phillips also had, for general distribution, a large number of small catalogues in pamphlet form, which contained so much valuable information



that they were almost worth their weight in German silver.

The Law Telegraph Company of New York had their new switch-board and system in good working order. It was inspected by all with vivid interest, and was conceded to be a system uniting great speed in connection with a minimum of space occupied.

In the board exhibited, which consisted of a table about two feet square, the top of which was covered with brass connection strips, arrangements were made for four operators, one on each side. The lines each terminated in a weighted cord and plug, the cord being connected by a spring to the line terminal. Upon receiving a call by the telephone, which is always in circuit on a call wire, all there is to do is to take the two plugs of the two lines and connect them to one strip, touching them both before connection to a battery strip, thus giving the signal to both parties at once.

Messrs. Post & Co., of Cincinnati, showed a large supply of apparatus, all of which was sold upon the spot. They had two 50-line standard plug switch-boards, one of which was furnished with foot-power and the other with hand-power for operating the magneto generator.

A battery pole-changer was shown, and a handsome supply of bells and other calling apparatus, fitted with novel and useful appliances; one bell, for example, was fitted with an automatic switch, which was arranged so as to receive with equal ease and be operated by either a Bell telephone or a pony crown.

This firm is justly noted for the excellence of the finish that their manufactures receive. They have made a new departure in several of their bells, in the way of ebony finish, and a number of fine samples of this character were on exhibition.

Chas. Williams, Jr., of Boston, one of the best-known manufacturers of telephonic apparatus in the world, showed several switch-boards and a variety of magneto bells of standard, skeleton and desk form. The exhibit of Mr. Williams was remarkable for its substantial form and character and for its strict regard to utility.

One of the switch-boards exhibited was a somewhat singular and unique piece of apparatus, covered with push buttons of various colors. Each perpendicular row represented one circuit, and to connect any two circuits together it was only necessary to press any button on both of the lines, taking care that the two pressed were both upon the same horizontal line.

The buttons were so arranged that when any button is already pressed, no other on the same line could be pressed without causing the first to spring up. This was only exhibited as a novelty, as it has not yet been introduced into practice. The other switch-board was of the regular Williams spring-switch pattern, and is usually regarded as the best board of its class.

Prominent in the rank of exhibitors was the Utica Fire Alarm Telegraph Company. This firm, though a new comer, is an ambitious one, and, if enterprise guarantees success, will surely attain it. They were alone in the exhibition of an unusually fine collection of novel small wares and specialties in tools. Fine grades of plyers and screw-drivers, of several sizes and performing special functions, were to be seen in their case, while wires of every imaginable grade, color and size gave a lively appearance to the exhibit.

The chief articles exhibited by this firm were, however, a pair of Combination Dial switch-boards. In these boards the line wires each run to the axle of a small crank or switch button, which may be rotated round its centre, and which may be caused to make contact, at the will of the operator, with any one of a series of studs, composing a kind of dial, which are connected by wires, each stud with its corresponding stud on the other dials. At the centre of the board is another and larger dial, by which the attendant throws his supervising instruments into and out of circuit with any pair of connected lines.

The Western Electric Manufacturing Co., of Chicago and New York, showed many interesting pieces of apparatus, among which were observed two 50-wire sections of the Western Electric central office switch-board, including shutter drops, jackknife switches and spring jacks, and having its cords fitted with pulleys and weights to restore them to their normal position when the plugs are released from the connection strips.

Different patterns of magneto bells were shown, and a conspicuous feature in the exhibit was the police signal box of the Chicago municipal system.

Many samples of covered and line wire were exhibited by this well-known firm, as was also an anti-induction cable, consisting of a number of insulated wires inclosed in a leaden or other covering, while through the centre of the group of wires is run a bare copper wire, which, when the cable is in operation, is connected to another wire that is not included in the cable. This method is claimed to be a perfect antidote for inductive disturbances.

This company also had upon exhibition a section of the so-called duplicate switch-board, in which, when used, all the wires entering the office are led to each section of the board.

The exhibit of the Gilliland Electric Manufacturing Co., Indianapolis, comprised magnetobells of several varieties, including Nos. 1 and 2 ordinary bells, extension bells, and a beautiful and ornate drawing-room set, including desk, battery box, drawer and base-board; while on the base-board wires are arranged for the bell and transmitter. These sets are made to order, in walnut, oak or mahogany.

This firm also showed some unique skeleton vibrating bells, having a circular metallic frame; Law Telegraph combination sets for exchanges using that system, and two complete central office switch-boards—one for 20 circuits and one for 10 circuits—each provided with lightning arresters, bells, switch bars for connecting any two circuits together, signaling annunciators for each line, desk and batteries.

These sets are intended principally for social purposes, or institutions, and are very convenient, as every possible wire is already run, leaving very little work to be done by the operating party.

A noticeable feature of this exhibit was a magneto bell, which, when its crank was turned, gave forth the melodious strains of a music box. This excited much comment, and was evidently by many regarded as a triumph of mechanical art.

The Gilliland Company has ever proved itself to be in the forefront of telephonic enterprise, and prides itself upon being always a little ahead of the times.

Messrs. Davis and Watts, of Baltimore, showed a six-circuit pin switch with annunciators and lightning arresters.

They had some notable samples of magneto bells having an automatic shunt and a certificate attached to each showing that the bells had been running by power constantly since April 15, 1881; had made 240,000 revolutions per day, thus making a total number of revolutions of 27,000,000, and that during that time they were not touched except to oil.

In connection with the apparatus of Davis and Watts, Mr. James Stabler, of Washington, D. C., exhibited the operation of his individual bell system.

In this system the armature of each bell is magnetized and vibrates between a pair of electro magnets. A wheel controlled by this armature operates a pointer over a dial. The bells are operated by successive steps of the armature and ratchet wheel under the influence of a pole-changing key. Only one bell magnet can be in the circuit at a time. When the desired bell is reached, the magnet of that bell is in circuit, the other bell magnets being shunted out. Then the battery is increased, causing the bell to ring.

This is the first individual bell showing the application of alternating currents operating a step-by-step movement.

Two other individual bell systems were exhibited, both of which were based on the principle proposed originally by Mr. Francis Blake, namely, a series of magneto bells, all originally out of circuit, but automatically cut in one after another, and apparatus whereby at the moment any one is cut in the signal may be given.

One of these was the invention of Mr. Ross of Nashville, by whom it was exhibited. It consists of a series of clocks. The clocks are started by turning a magneto machine in one direction. When that point is reached where the desired bell is in circuit, the crank of the magneto machine is turned in the other direction, and the clocks are all stopped and the signal is given at the desired point.

The other system shown is patented by Mr. L.

S. White, of Waterbury, Conn., and was exhibited by Mr. A. M. Young, who is, we understand, in part proprietor of the patent. In this system, also, the bell magnets at each station are cut out, but are alternately cut in by a battery current operated by a rapid step-by-step transmitter. When the proper bell is reached, the current may be either increased or reversed, and thus caused to ring the bell loudly.

## Notes and Queries on Electricity and Electromagnetism and Their Applications.

BY T. D. LOCKWOOD.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 155. When the distance between the poles varies, by what rule can the proper dip be ascertained, in order to maintain the wire at the same distance from the ground at the lowest point of each span?

A. The dip of any span of wire—that is, the actual perpendicular distance from the highest point of the span to the lowest—varies, not in proportion to the distance between one pole and the next, but with the square of that distance.

It adds much to the symmetrical appearance of a line, to say nothing of its superior operation, when the tension is made uniform from pole to pole, all through the line; and this may be secured by remembering the simple statement given in last answer. We have already seen that 24 inches in a hundred yards may be taken as a standard, and we now see from the foregoing observations that the formula for finding any required dip must be: That the square of 100 bears the same proportion to the square of the length of the span under consideration as 24 does to the dip required in inches.

If, then, we wish from this to ascertain the height of the supports on the poles, so as to keep the dip between the spans a uniform distance from the ground, all we have to do is to add the amount of dip, which we have ascertained, to the distance which we have decided upon as the distance from the lowest point of each span to the ground, which gives as a result the height of pole support required.

To reduce these rules to practice, we illustrate by the following examples: We have a line, and the majority of the poles are 100 yards apart. Some spans, however, are, from circumstances over which we have no control, 150 yards long, and one 200 yards long.

It is required to find the proper dip that should be allowed in the longer spans, so as to keep the wire at an even distance of 25 feet from the ground, at the lowest point of each span.

We do this as follows, keeping in mind the above formula: Finding that the square of 100 is 10,000, and that the square of 150 is 22,500, by simple proportion it is readily ascertained that 10,000 is to 22,500 as 24 is to 54 inches, or 4 feet and 6 inches. This, therefore, is the requisite dip for a span 150 yards long. Now, to find the height at which this span should be supported at the poles, all we need do is to add the 25 feet that we have stipulated for as the lowest point of the dip to the dip itself—25 feet added to 4 feet 6 inches gives a height of 29 feet 6 inches, which must be the height of the insulator from the ground.

We now consider the span of 200 feet long, and proceed as before. The square of 100, that is 10,000, bears the same proportion to the square of 200, or 40,000, as 24 bears to 96 inches, or 8 feet. Eight feet, therefore, must be allowed in this case, and the supports made 33 feet from the ground. In these remarks it is not to be understood that an arbitrary standard of 24 inches dip in 100 yards is insisted upon; but, having already decided upon a standard dip, it is desired to show how to maintain that dip uniform.

Q. 156. What is the cause of the humming noise often heard where wires are attached, and how may it be prevented?

A. This noise, which is frequently so loud as to be very annoying, especially to the inmates of houses over which the wires are run, is caused by the vibration of the wires under the influence of the wind, in the manner of an *Æolian harp*.

It may be prevented in the following way: Two pieces of stout india rubber tube, like that used for covering the rollers of wringing machines, are cut about two inches long, and one is fastened at each end of a piece of line wire, four



or five feet long, by passing the wire through it and twisting it back on itself. This piece of wire is then fastened at its centre to the insulator, as usual, by a tie wire.

The line wire is then cut and an end fastened to each of the sections of hose, by passing it round the outside of the piece of hose, and twisting. To preserve the continuity of the line, a small iron or copper wire is then connected and soldered to the two ends of the line beyond the rubber. The insertion of a piece of small chain in the line, surrounded the same way by a continuity-preserving small wire, is also sometimes successfully adopted. Other remedies, all tending to the same end, are occasionally employed, the main object in each case being to prevent the vibration by interposing a damper.

Q. 157. Are aerial wires ever carried in cables?

A. Yes; it is frequently found desirable to run a number of wires over the same route for a short distance, while the available space is circumscribed. This plan is then found very effectual, and is adopted by several of the local city companies in America. It will be more universally employed in the future, as the number of wires, owing to the rapid growth of the telephone systems, is daily increasing, and has already become a nuisance, both to the companies owning the wires and to the public.

In London cables containing as many as fifty insulated wires are suspended by frequent hooks from No. 8 wires. Although the insulation of these wires is often not first-class, yet it is sufficiently good for short lines.

Q. 158. Does the resistance of wire vary with the temperature?

A. Yes; the resistance of all wires increases with increased temperature, and the resistance of nearly all metals increases at the same rate, iron and thalline, according to Dr. Matthiesen, being the only exceptions. From the tables given by Latimer Clark, we learn that the resistance of iron wire increases about 35 per cent. for each degree Fahrenheit, and that the resistance of copper increases as the temperature rises 21 per cent. for each degree.

It is also ascertained in the resistances, which increase with increased temperatures. The rate of increase is not reckoned all through on the original resistance, but is, as it were, computed in the same manner as compound interest on a sum of money. For example, if we have a wire which measures 100 ohms at 60° Fahrenheit, and the resistance be increased by a certain amount by a rise of one degree in temperature, it will be increased by the next degree of rise at the same rate per cent., calculated on the original resistance, plus the amount increased by the first degree of rise.

#### A Timely Proposal.

To the Editor of The Operator:

SIR: The men in this office would very much like to express their regard for and sympathy with Mrs. Garfield in her great affliction. As there are a great many telegraphers in the United States who are undoubtedly of the same mind, I am requested to ask you if you cannot start, through THE OPERATOR, a subscription to be known as the "Telegraphers' 25-cent Garfield Fund," undertaking to receive and acknowledge contributions yourself. This amount is small, but will make quite a large sum when all subscriptions are in. Please consider the matter and let us hear from you, either through THE OPERATOR or by mail.

J. M. CRONENBERG,  
W. U. Tel. Office.

TOLEDO, O., Sept. 22, 1881.

#### A Caustic Retort from Worcester.

To the Editor of The Operator:

SIR: In your last issue I see a communication dated Worcester, which is so wide of the truth that a few lines of correction seem called for. Either "N." is very "new" in the business, or the gold plate at Springfield had such a dazzling effect on his eyesight that he can see no good in anything which does not have that peculiar glitter. The old Western Union switch he speaks of as being in use here exists only in his extraor-

dinary vision. The switch referred to was made to order about one year ago, expressly for the Worcester office, and is considered an excellent one. It has 200 circuits, on which there are now upward of 700 subscribers, and new ones are being added at the rate of 10 to 15 per month. The office answers, on an average, about 4,000 calls per day, and the odd attachments spoken of are something we have never discovered here and must have been purely imaginary. The large number of subscribers and the constant increase of the same in a city of less than 60,000 inhabitants, is assurance enough to the management that their efforts are rewarded with a very good degree of success. As to the muchness spoken, whatever that may be, I think the stockholders of a good many exchanges would be pleased to catch on to it, provided their dividends came along as surely as do those from the Worcester Exchange. It is not impossible but "N." might spend a day to advantage in Worcester, if he contemplates entering the business.

D.  
WORCESTER, Mass., Sept. 20, 1881.

#### DASHES HERE AND THERE.

The American District Telegraph Company's boys struck for higher wages in Chicago last Monday week, but were unsuccessful.

Messrs. Presbury & Hildreth, the proprietors of the West End Hotel, Long Branch, gave a farewell banquet to the newspaper correspondents and telegraphers on the 21st ult.

Complaint is now made that the electric light is bad for the eyesight, and that people obliged to work for hours continuously by this light—such as salesmen and clerks—are having their eyesight gradually destroyed thereby.

A telegraph line is now being built in Siam. It is thought that the line can be constructed in a few months, after the close of the rainy season, and that Bangkok will be in communication with the outside world before the first of next February.

A great clothing house at Paris exhibits several sewing machines which move by electricity with wonderful speed and regularity. The establishment uses them for its own sewing, and thereby greatly lightens the task of the hard-worked seamstresses.

The handsome offer made by the Saxon Importing Co. in their advertisement, on another page, simply to introduce a new gun, is one of the greatest bargains in fire-arms. They actually offer a first-class breech-loading shot-gun for \$5.50. Many thousand of these guns are already in use in Europe, and they are said to give great satisfaction.

Fifty gold, 200 silver and 500 bronze medals and diplomas have been placed at the disposal of the jurors of the International Electric Exhibition. The President of the jury, the reporters, and the secretaries will be French. Belgium, Germany, England, Italy and America will each have a vice-president.

Canada, with 35,000 miles of telegraph wires, has one telegraph office to every 2,430 persons. England has only one office to every 5,860 persons. For the whole world the average number of telegrams sent annually is one for every seven or eight persons. The number of telegrams per 1,000 inhabitants is about as follows: New Zealand, 2,394; Victoria, 809; Switzerland, 753; the United States, 730; Great Britain, 704; Belgium, 471; France, 387; Germany, 280; Greece, 196; Austria, 173; Spain, 89; Russia, 60; Cochin China, 9; the East Indies, 6.

The British Postmaster General's report gives the following statistics of telegraphers employed in the postal service, exclusive of 225 pensioners:

STAFF EMPLOYED EXCLUSIVELY ON TELEGRAPH DUTIES.			
Chief engineers and other superior officers	.....	11	
Clerks, telegraphists, etc.:	Male.	Female.	
London	2,033	904	
Provincial	3,031	652	
	5,064	1,556	
Messengers	.....	6,620	
		4,736	
		11,367	

All the materials required for the first section of the telegraph land lines in China, to be erected by the Great Northern Telegraph Company for account of the Chinese Government, have been gradually sent for some time since. The first

shipments have arrived, and the line is now being very expeditiously erected. Meanwhile, the Chinese authorities have thought it desirable that the line should be duplicated from the very beginning, and the Great Northern Telegraph Company are therefore now preparing to ship all the material required for that purpose.

At the Paris Electrical Exhibition, recently, an operative representation by telephone was given in the presence of M. Gambetta, Admiral Clouet and others. The performance came off in the two rooms set apart for the purpose on the first floor. The opera was "Robert le Diable." The sound of the singers' voices, transmitted from the Grand Opéra by telephone, was heard with the greatest distinctness, but the orchestral effects were reproduced very imperfectly. Nothing more beautiful could be imagined than the aspect of the palace with its myriad lights.

A lady at — Springs telegraphed her milliner at W. to send "Grenadines by first train." The operator at W. stuck on "Grenadines." After breaking until the sending operator left in disgust, he set to work to guess the missing word. The nearest he could come to it was Green Adkins, an old negro living near there. "Ha! I've got it," and down it goes. The message was delivered and Green Adkins started on first train for the Springs, where he was given a note for the Grenadines and sent back to W. The payment of Adkins' fare both ways settled it with the company, but it has not been entirely settled with the boys yet.

In the report presented by the Executive Committee of the W. U. Tel. Co. at the quarterly meeting of the Board held June 8, 1881, the net revenues for the quarter ending June 30 (May being partially and June wholly estimated) were stated at \$1,836,391. The official returns for the quarter (ended June 30) show the net revenues to be \$1,842,844.22 or \$6,453.22 more than the estimate. The net revenues for the quarter ending Sept. 30, based upon official returns for July nearly complete returns for August, and estimating the business for September, will be about \$1,949,894.61. As stated last issue, a quarterly dividend of 1½ per cent was declared.

Last year Mr. David Brooks, of Philadelphia, made a proposition to the postal telegraph authorities to lay an experimental line of his underground telegraph system between Waterloo and Nine Elms on the London & South-western Railway. It was to be paid for upon condition that it worked satisfactorily for a period of six months. Mr. Brooks also proposed to extend the system from Nine Elms to Clapham during the present year upon the same terms. Last spring he returned to England to carry out his second proposition, which had been accepted by the post office. The extension of the line from Nine Elms to Clapham has now been completed and promises to be as successful as the first experiment.

#### NEW YORK CITY ITEMS.

The New York Electrical Society will resume its meetings on Wednesday evening, Oct. 5.

The stock of the Northwestern Telegraph Company has been placed on the list of the New York Stock Exchange.

All the employés of the A. D. T. Co., below inspectors, wore crape on the left sleeve of their coats on the day of President Garfield's funeral.

At the annual meeting of the stockholders of the Gold and Stock Telegraph Company, Sept. 28, the following directors were elected to serve during the ensuing year: Messrs. Norvin Green, J. O. Green, T. R. Edson, James H. Banker, Augustus Shell, Jay Gould, William M. Bliss, E. D. Morgan, John Van Horn and T. T. Eckert. No statement of the finances of the company was made public.

#### PERSONAL.

The many friends of Mr. W. H. Stanton, of the St. Louis W. U. office, will regret to learn that his wife died in that city Sept. 14.

Mr. Frank L. Thirkield, of the Indianapolis (Ind.) W. U. office, has been appointed manager of the Baltimore (Md.) Mutual Union office.



Mr. J. W. Christie has been transferred from the Western Union office at Wilmington, Del., to their main office in Philadelphia.

Mr. James Merrihew, the popular and efficient superintendent, has been given temporary supervision over the main Western Union office in this city.

Mr. Charles Flinn, operator at Longview Junction, Tex., was married July 30, to Miss Smith, W. U. manager at Jacksonville, at the residence of the bride.

Mr. James Gamble, for ten years superintendent of the Western Union for the Pacific States, has been appointed General Manager of the Mutual Union.

Mr. George Kenney, a clerk in the employ of the American Union, at Philadelphia, was killed in a railroad smash-up on the Philadelphia & Reading Railroad, on the 22d ult.

Mr. Will. S. O'Brien, manager of the W. U. office at McGregor, Iowa, was in New York last week during his vacation, and did not forget to give THE OPERATOR office a call.

Mr. J. G. Carnachan, who filled the position of operator and way-bill clerk for the N. Y., P. & O. R. R. at Oil City, Pa., for several years, resigned Sept. 1, to accept a more lucrative position elsewhere.

Geo. Ferd. Webb, operator at Saccarappa, Me., died Sept. 19, after a long and painful illness, at the residence of his father. The funeral, which took place Sept. 21, was largely attended, the stores of the village being closed during the service.

After a lingering illness, Sarah J., wife of Jno. D. Voltz, of the Western Union office, Nashville, Tenn., died in that city Aug. 28. Mrs. Voltz was a most estimable lady, and her death is mourned by a large circle of friends. Her funeral took place from the Church of the Advent. Among the pall bearers were Manager Fisher, Night Chief Rust and J. H. Ford, of the Western Union.

BALTIMORE, MD.—The Mutual Union has secured the large office of the P. W. & B. R. R. Co., on Balto. street, and will open for general telegraph business about Nov. 1. Mr. C. C. Wolff, late chief operator of the W. U. main office, has been reduced to the ranks, and Mr. R. J. Bloxham promoted to Mr. Wolff's position, not Mr. Tracey, as was mentioned in THE OPERATOR of Sept. 15. A new electric light company will be started this month; G. F. West, Superintendent.

In recognition of his obliging and untiring efforts to keep the citizens of Meadville, Pa., informed of the fluctuations in the late President's condition, to accomplish which he had on several occasions to remain on duty beyond his regular time, Mr. E. M. Boynton, manager of the W. U. office at that place, was recently presented with a handsome autograph album and an elegant gold watch, chain and charm. As the Meadville Republican says: "It was a timely present to a worthy recipient."

The following compose the staff of the American Telegraph and Cable Company, at Canso; Mirror Side, Mr. Connor, C. C.; St. Pierre, Mr. Courteen; Land's End, Eng., Mr. MacLaine and Mr. Nash of St. Pierre. To arrive, Mr. J. Brown, Manager, and Mr. Gerrard. Morse Side, J. J. Burgess, C. C., North Sydney; B. B. Kay and C. H. Ward, New York; T. E. McDonald and B. B. Palmer, North Sydney; writers and checks, D. E. Blois Harrington, St. John, N. B.; M. Densmore and A. Coste, St. Pierre; D. Mackaracher, Tor Bay; Arthur Winterbotham and James Ward, South Sydney; Frank Hunter, Charlotte-town, and Arthur and Reg. Young, Canso.

NASHVILLE & ST. LOUIS.—Mr. L. Park is agent and operator at Decherd, ably assisted by his daughter. Miss Lena has the honor of being the only lady on the line, and the boys mentally tip their hats when they answer her call. G. H. Norton is agent and A. Y. Smith operator at Tullahoma; J. M. Bramblett agent and operator at Normandy, J. H. Holt at Wartrace, and J. M. Miller at Christiana. M. F. Jordan is at Murfreesboro; Wm. Ford, nights. J. R. Park is agent and operator at Lavergne; and last, but not least, either in the estimation of the boys or in weight, is our efficient dispatcher, Mr. W. P. Sweeney, who is assisted by A. Mack, with D. B. Carson assistant and extra man, and H. G.

Comstock, extra agent and operator. Charley Stewart holds the fort nights.

OSHKOSH, WIS.—A number of important changes have occurred in the commercial department of the W. U. Co. in Northern Wisconsin during the past month. At Appleton, the city office is now managed by Miss Belle Madison, who relieved A. H. Allen. At Fond du Lac, we find Mr. Ed. Lucas, manager; Mr. Sharpe, the former manager, having resigned to engage in other business. At Oshkosh, Arthur H. Allen, late manager at Appleton, succeeds H. D. Sloat, Mr. Sloat having retired from the profession to engage in the grocery business at New London. Oshkosh is the second city in the State, and the telegraph business at that point is increasing rapidly. Mr. Allen is assisted by H. D. Perry, a C. & N. W. Ry. operator, who hails from Wrightstown. The genial Tom Callahan is still at Neenah, Wis.

Mr. Dwight, the general manager of the consolidated companies of Canada, is given great credit for the way in which he has provided for the operators, giving employment to all Dominion operators wherever he can make arrangements to do so, and providing by other means for those that were "left." The agencies in most cases, however, are being given to the Montreal agents. Telegraph matters have been looking up of late in this "Canada of ours," and a greater boom than ever is expected this fall, so none need be idle. All the large offices have been transferred, and by the end of the present month it will be one affair. The office at Stratford, Ont., has just been consolidated. The following is the staff under the new management: Mr. W. N. Warburton, general manager and agent, and the following operators, "Tom" Bates (formerly of Peterboro and the Dominion here), A. W. Cassels (formerly Dominion), "Jim" Flynn and Herb. Mills.

We regret to have to announce the death of Miss Fannie E. Macdonald, which took place at the residence of her brother, at Camden, N. J., Sept. 13. She was buried on the 16th ult. at North Laurel Hill cemetery, Philadelphia. Miss Macdonald was well known and was a general favorite in the telegraphic profession. She learned and commenced telegraphing at Falls of Schuylkill, Philadelphia; was afterwards transferred to Kellyville, Penna., on the West Chester Railroad, and, after spending some years there, took charge of the Delaware avenue market office, Philadelphia. She was subsequently made operator at the executive office of the Lehigh Valley Railroad in Philadelphia, where her winning nature and undoubted ability earned her speedy promotion. She was then advanced to a clerkship in the Auditor's office of the same company, a position she held at the time of her death. Her untimely end has caused widespread sorrow among a large circle of telegraphers, for, in one so young and accomplished as Miss Macdonald, death was about the last affliction expected.

Mr. O. M. Chesney, of Topeka, Kan., writes to THE OPERATOR, complaining of very harsh treatment at the hands of the Texas & Pacific Railroad and H. C. Brown, "R. A.," of that company. He says he was sent to a desolate, sandy wilderness where there was only one house, and that a portable one, 8x10, with no other in miles, and no place to sleep or get anything to eat. He was compelled to remain without food from Sunday noon, Sept. 11, until the following Wednesday, the trainmen having forgotten to bring him what he ordered from the stores at end of the division. Several others were sent to the same place, being assured that there was "a nice little town" there, but not finding the alleged "town" they incontinently returned by the next train east. Mr. Chesney is now ill at Topeka from the effects of his treatment in Texas. He says that when he asked Mr. Brown, "R. A.," for his time, he found that pay for two days and one night had been given to the operator who had come down and gone right straight back, disgusted with the place, and this amount was deducted from Mr. Chesney's pay, because the other operator was gone long enough to have worked the time and Mr. Brown, "R. A.," had already paid the money, and could not make his reports right if he paid it again.

## BORN.

CREAMER.—Aug. 6, to J. Marion Creamer, operator W. U. Tel. Co., Baltimore, Md., a daughter.

CUNNINGHAM.—To C. B. Cunningham, manager W. U. Tel. office, Longview, Tex., a son.

WOODING.—Sept. 22, 1881, to Mr. Howard W. Wooding, operator private line, Middletown, Conn., a daughter.

## MARRIED.

REICHENBACH—BOERINGER.—Sept. 20, 1881, at the residence of the groom, in St. Louis, Mr. J. J. Reichenbach, formerly of the Cairo & St. Louis Railway, to Miss Lizzie Boeringer, of Hermann, Mo.

## DIED.

UPPERMAN.—At Deer Park, Md., Sept. 15, 1881, Lester Fred, aged 16 months, only child of William B. and Minnie A. Upperman.

MACDONALD.—Suddenly, on the 13th ult., at Camden, N. J., Fannie E. Macdonald.

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(Concentrated and Artificially Digested.)  
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For all forms of **DYSPEPTIC, WASTING**  
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**The Fibrin and Wheat** restores the confirmed dyspeptic stomach and cures all forms of long standing nervous debility. Vitalizes weakly children and energizes old age. Sure preventive and cure for diphtheria, infantile diarrhoea and cholera infantum. \$2 each, or six bottles for \$10. Sample bottle \$1.

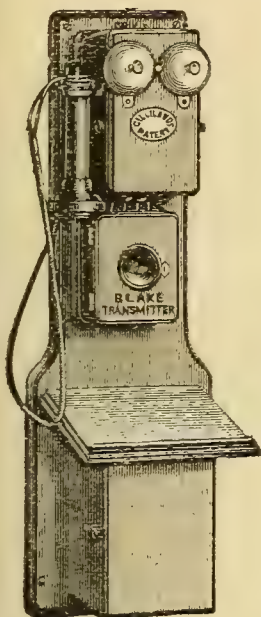
**The Beef and Milk** is for a very weak condition, and never fails to assimilate, however weak and irritable the stomach. Invaluable for nursing mothers. \$2 each, or six bottles for \$10. Sample bottle \$1.

**The Life Food** is to be taken between meals to relieve sense of "goneness." Never failing remedy for the alcohol, opium and tobacco habit, and for insanity and cancer in their early stages. \$1.50 each, or 6 bottles for \$7.50. Sample bottle 75c.



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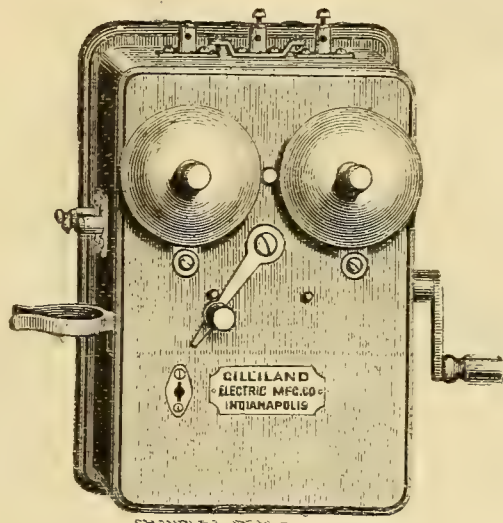
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**TANDARD**  
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37,000 now in use.

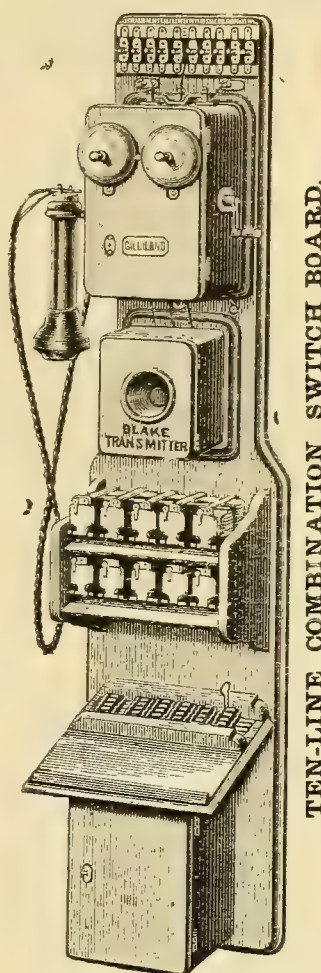
no further attention is required until desired to talk in the opposite direction. When the Telephone is hung up, the line is restored for the use of others upon the same circuit, the Indicator simply governing the talking. Additional to the superiorities it possesses as a Secrecy Switch, it has an excellent feature in that all of our Bells can be converted from a Gravity to a Secrecy Switch, or vice versa, and provide for the possibilities of the Individual Bell in the future.



**SECRECY SWITCH.**  
**STANDARD MAGNETO.**

This Secrecy Switch has many advantages over the old style. It can be attached to any or all of our Magneto Bells by a change in the connections and the addition of the Indicator, for in their construction this change was provided for. In all the Secrecy Switches heretofore made, it was necessary to turn the switch every time it was used, but with this latest improved, the Gravity Switch is employed. The Indicator controls the talking, and when set for the Exchange, no further attention is required until desired to talk in the opposite direction. When the Telephone is hung up, the line is restored for the use of others upon the same circuit, the Indicator simply governing the talking.

Additional to the superiorities it possesses as a Secrecy Switch, it has an excellent feature in that all of our Bells can be converted from a Gravity to a Secrecy Switch, or vice versa, and provide for the possibilities of the Individual Bell in the future.



TEN-LINE COMBINATION SWITCH BOARD.

## 10-LINE and 20-LINE SWITCH BOARDS,

For the club system of small towns and villages.

INVALUABLE FOR

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Being complete, compact and handsome

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## SUPPLIES OF ALL KINDS.

SEND FOR CATALOGUE AND PRICES.

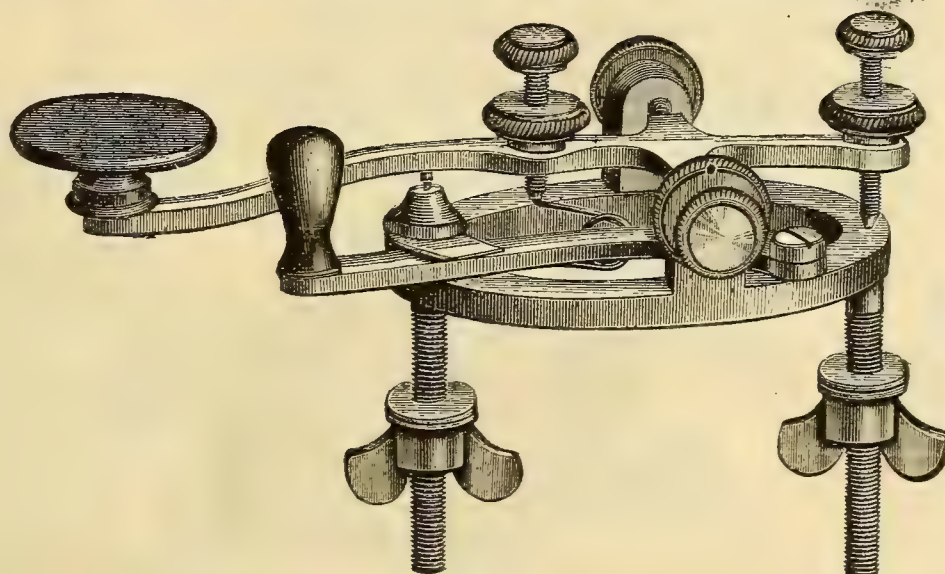
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J. H. BUNNELL & CO.,

112

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BEST IN THE  
WORLD.

PATENTED Feb. 15  
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The lever is *only one-half the weight* of the ordinary brass lever, as generally made.

The entire Lever and Trunnions together being made of *but one piece* of fine wrought steel, the common defect of loose trunnions is avoided, the strength of a heavy brass lever is obtained with much less weight of metal, and, by the perfect bearing which the solid trunnion gives, together with the use of *hardened platina points*, *sticking* is *absolutely prevented*.

The size and proportions are such as to make it the most perfect operating key possible to obtain, either for the hand of the skilled and rapid expert, or the beginner.

PRICE, \$3.00. FINELY FINISHED, AND LEVER NICKEL-PLATED.  
LIBERAL DISCOUNT ON ORDERS FOR COMPANY SUPPLY.

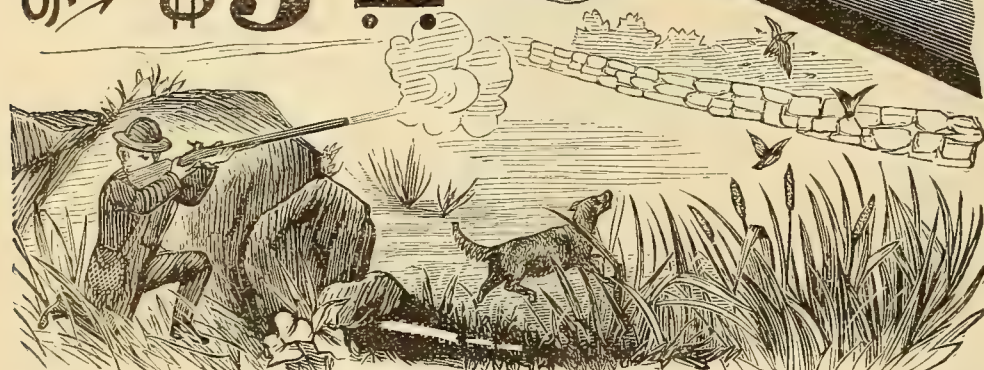
Steel Lever Key sent by mail post paid, to any part of U. S. or Canada on receipt of the above price, by registered letter or money order.



**A \$ 15.00 BREECH LOADING SHOT GUN FOR \$5.50**  
**WEIGHT 6½ lbs. LENGTH 4 ft.**

**THE SAXON BREECH LOADER**

**ONLY \$5.50**



### THE SAXON BREECH-LOADING SHOT GUNS

Having been extensively introduced in ENGLAND and FRANCE, where they have given universal satisfaction; and, wishing to introduce them in the United States, we have concluded to sell a LIMITED NUMBER of this matchless weapon at a price which brings them within the reach of every one.

The SAXON BREECH-LOADER has a Blued Barrel, thoroughly tested, guaranteed perfectly safe and accurate, case hardened, handsome stock, and every part of it made of the very best material. Length 4 feet; weight 6 1-2 pounds. The improved patent breech makes it far superior to, and less liable to get out of order than any other breech-loading Shot Gun in the world.

Upon receipt of \$5.50, and the attached Certificate, before March 1st, 1882, we will ship the above Gun to any address in the United States.

**CUT THIS CERTIFICATE OUT.—IT IS VALUABLE.**

Upon receipt of this Certificate, before March 1st, 1882, with \$5.50, we hereby agree to forward to any address in the U. S., one of our Saxon Breech-Loading Shot Guns, and guarantee it in every particular.

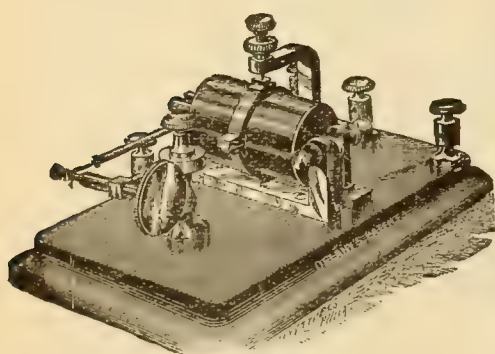
**SAXON IMPORTING CO.**

**CUT THIS CERTIFICATE OUT.—IT IS VALUABLE.**

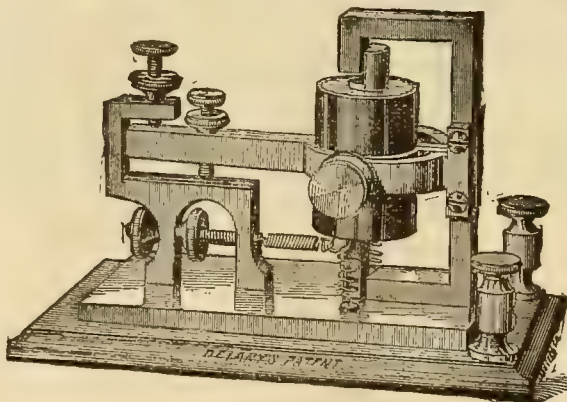
The above offer is only made to introduce this incomparable gun in this country. To protect ourselves from dealers ordering in large quantities, we have concluded to insert this Advertisement, one time only, in this paper, hence require you to cut out the above certificate and enclose it to us with your order. We will not sell more than one gun to the same person, at the above price, and not then unless the order is accompanied by the above certificate. Our regular price is \$15.00, and that amount will be charged unless order is accompanied by Certificate. In no case will we send more than one gun with each Certificate. If you do not wish a gun for your own use, you will have no trouble in disposing of it at a handsome profit. In selling samples of the "SAXON" at \$5.50 each, we are making an ENORMOUS SACRIFICE, but we feel sure that one gun going into a neighborhood will sell ten more at our regular price. We wish to caution you against persons offering guns in imitation of the SAXON, to ascertain if the gun is genuine, see that the word "Saxon" is stamped on it. The sporting papers generally, join in praising THE SAXON BREECH-LOADING SHOT GUN as being one of the most reliable Sporting Guns in the world. REMEMBER, this is a SPECIAL OFFER, and will not appear again, as we wish to introduce the SAXON BREECH-LOADER in America as soon as possible. We guarantee this Gun to be exactly as represented, and will return the money if they are found to be otherwise. Should you desire it, we will send the gun C. O. D., (with the privilege of examination) on receipt of \$2.00, to guarantee us against loss by Express charges. If we are strangers to you we refer you to any Bank or Express Office in New York City. For \$1.00 extra we will send with the Gun, one of Our New Sportsman's Cartridge Belts and 50 Metallic Base Reloadable Shells. If you have friends in New York have them call and see us. Send money at our risk by P. O. Money Order, Registered Letter, or Bank Draft payable to our order. Address,

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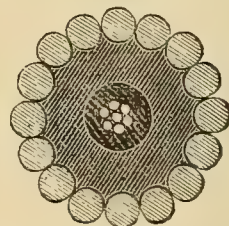
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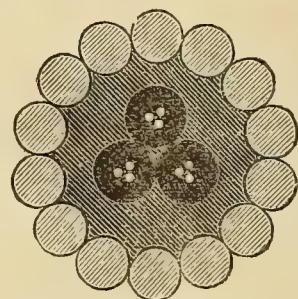
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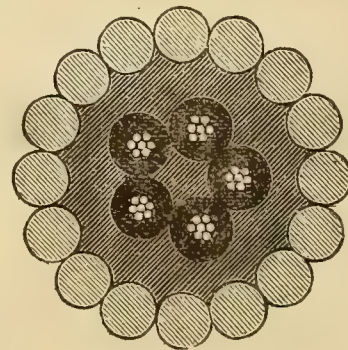
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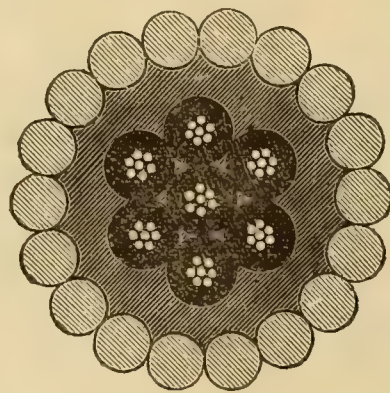
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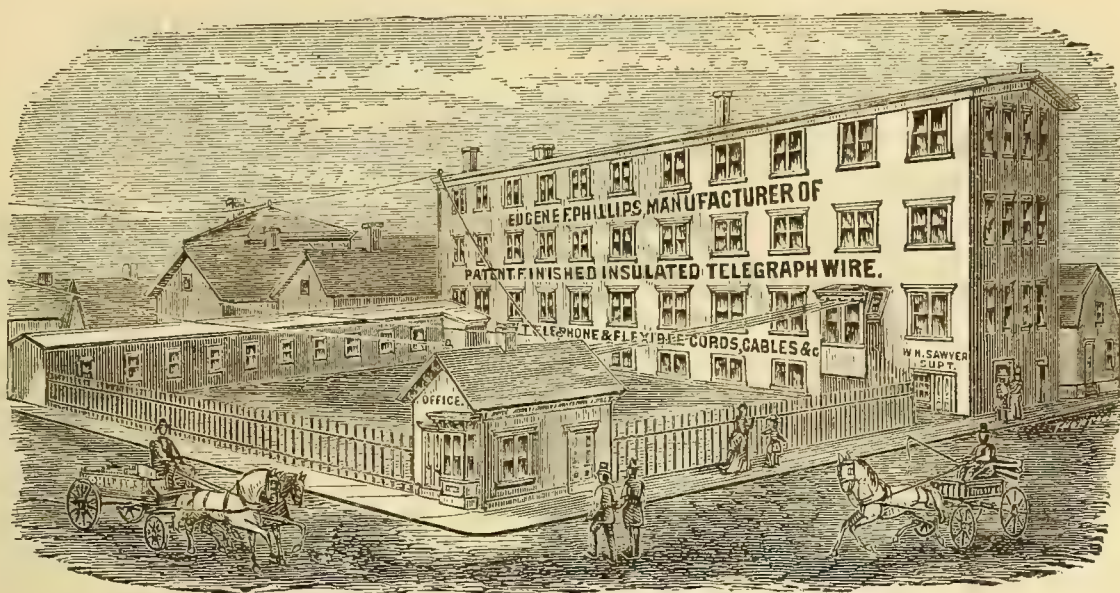
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## Insulated Telegraph Wire

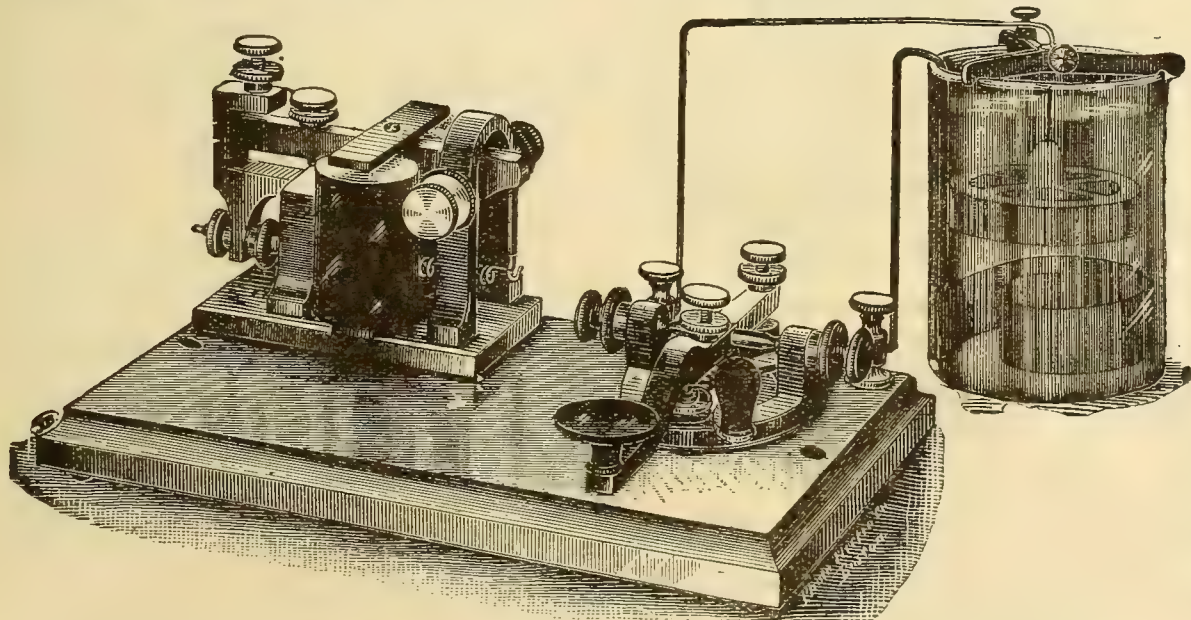
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PATENT RUBBER-COVERED WIRE, BURGLAR ALARM AND ANNUNCIATOR WIRE, LEAD-ENCASED WIRE, CABLES, ETC.

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PRICE FOR THE COMPLETE "GEM" LEARNERS' OUTFIT, \$4.20.

Consisting of the above large-sized Sounder and Key, a good Cell of Callaud Battery, one roll of Office Wire, Book of Instructions, Chemicals, etc. The only low-priced Learners Instrument made that has nicely finished **BRASS** Sounder and Key lever, with perfect adjustments for both.

Price for Complete Outfit.....	\$4.20	Price for Instrument alone, by mail, post-paid.....	\$4.00
" Instrument alone.....	3.40	" Instrument alone, for lines 1 to 15 miles....	4.00
" the whole outfit (except Glass Jar) with Key		Price for Instrument alone, for lines 1 to 15 miles, by	
and Sounder separate, by mail, post-paid.....	4.80	mail, post-paid.....	4.50

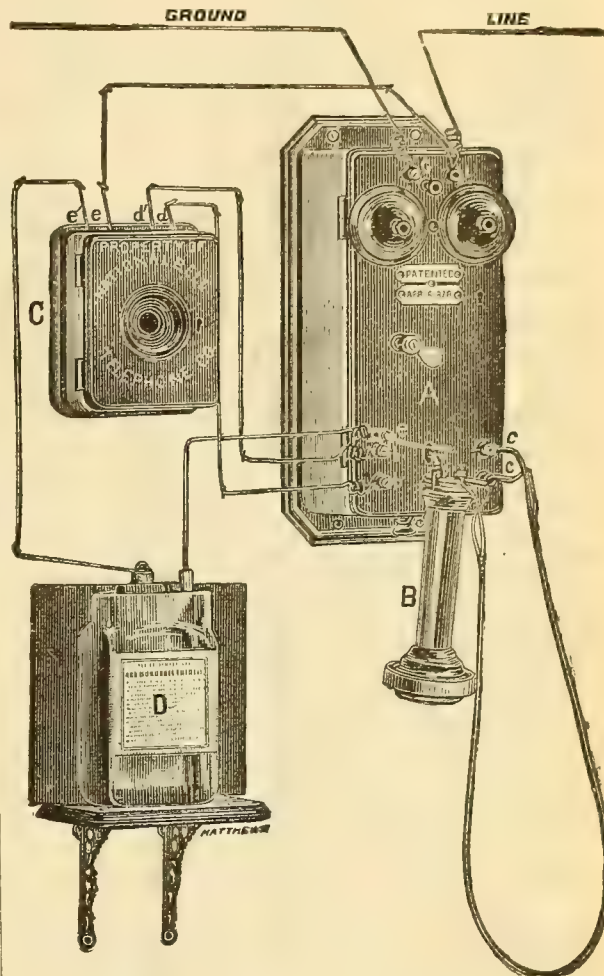
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Manufacturers of Telegraph and Electrical Supplies,  
No. 30 Hanover Street, Boston, Mass.

## The American Bell Telephone Company.

W. H. FORBES, President. W. R. DRIVER, Treasurer  
THEO. N. VAIL, General Manager.



This Company, owning the Original Patents of Alexander Graham Bell for the Electric Speaking Telephone, and other patents covering improvements upon the same, and controlling, except for certain limited territory, under an arrangement with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, the American Speaking Telephone Company, and the Harmonic Telegraph Company, the patents owned by those companies, is now prepared to furnish, upon application, either directly or through any of its agents, Telephones of different styles, and applicable to a variety of uses.

This company desires to arrange with persons of responsibility for establishing

### District or Exchange Systems,

in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

### PRIVATE LINE AND CLUB LINE

systems, for business or social uses. Also to introduce the telephone for

### SPEAKING TUBE

purposes, for which instruments will be leased for a term of years at a nominal rental.

This Company will arrange for telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

We respectfully invite attention to this matter, and any further information relating thereto can be obtained from the Company,

NO. 95 MILK STREET, BOSTON, MASS.

All persons using Telephones, not licensed by this Company, are hereby respectfully notified that they are liable to prosecution, and for damages for infringement, and will be prosecuted accordingly to the full extent of the law.



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And No. 117 Liberty st., New York,  
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### GALVANIZED TELEGRAPH WIRE

OF ALL QUALITIES.

No. 6 Wire in  $\frac{1}{2}$ -mile bundles, 550 pounds per mile.  
No. 7 Wire in  $\frac{1}{2}$ -mile bundles, 470 pounds per mile.  
No. 8 Wire in  $\frac{1}{2}$ -mile bundles, 388 pounds per mile.  
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No. 10 Wire in  $\frac{1}{2}$ -mile bundles, 268 pounds per mile.  
No. 11 Wire in  $\frac{1}{2}$ -mile bundles, 216 pounds per mile.  
No. 12 Wire in  $\frac{1}{2}$ -mile bundles, 168 pounds per mile.  
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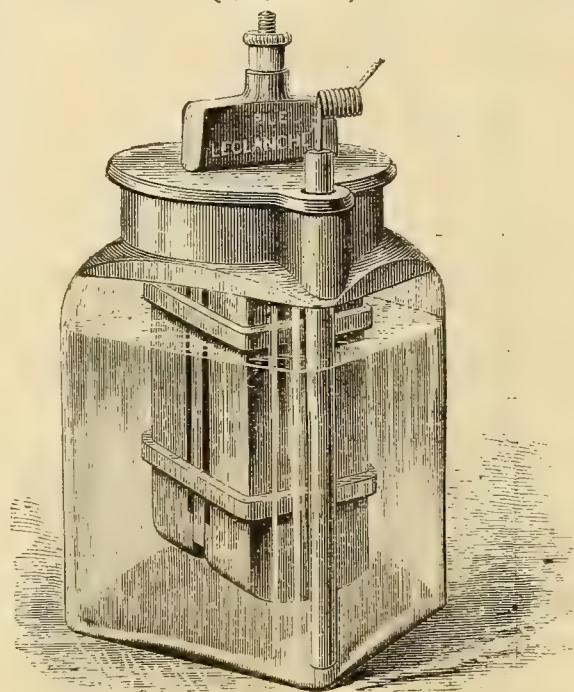
This Wire possesses the highest electrical conductivity, which is necessary to make Telegraph and Telephone Lines work with certainty and ease.  
Special attention given to

### Telephone Wire,

for which No. 12 is the average size used.

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(PATENTED.)



"Prism Battery" Complete.

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## GREAT TELEPHONE BATTERY.

The Realization of

**SIMPLICITY AND EFFICIENCY**

### In Electric Open Circuit Batteries.

Free from acid. Emits no odor. Does not get out of order. Lasts without renewal from six months to several years, according to use.

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Metropolitan Telephone and Telegraph Company.  
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The attention of the public is called to the new form of Leclanche Battery, in which the porous cell is dispensed with and for it substituted a pair of compressed Placques or Prisms, which are simply strapped to the Carbon (as shown in cut).

The Prism Battery is more easily and cheaply cleaned and renewed than any other battery. Beware of Infringements and Worthless Imitations.

Every genuine Leclanche Battery has the words **Pile-Leclanche** stamped on the carbon head, jar and prisms. All others are spurious.

"Prism" and Porous Cell Batteries for sale in any quantity. Zinc and Sal Ammoniac of superior quality.

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MANUFACTURER OF

## Kerite Insulated Telegraph Wire and Cables.

OFFICE: 120 BROADWAY, NEW YORK.

Factory: Seymour, Conn.

The discovery of the insulating compound, known as Kerite, is the result of more than ten years of uninterrupted experiment and application, as well as twenty years' previous experiment and experience in the manufacture of India-rubber. About ten years of this time was spent in assisting Mr. Charles Goodyear in the experimental department, while perfecting his improvement in vulcanized India-rubber and its varied applications.

The necessities of the telegraph business requiring an indestructible insulation, stimulated me to the discovery and perfecting of my compound known as Kerite, which combines the great advantage of durability with perfect insulation.

Kerite insulation is proof against the action of the corrosive elements in the earth, air and water; and, where it has been practically tested, has proved its superiority to all other insulation.

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It is not injuriously affected by the extremes of heat and cold, experienced in our climate, nor by length of exposure in the atmosphere.

It will endure long-continued heat below two hundred degs. Fahrenheit, while for short intervals it may be subjected to from two hundred and fifty to three hundred degs.; and it may be safely immersed in boiling water.

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It is also unchanged by being placed in the ground. Any corrosive elements in the earth do not act upon it; nor is it injured by the roots of plants, which soon destroy gutta-percha.

There are thousands of miles in use throughout the country, by Fire Alarm and other Telegraph Companies of all our principal cities.

It has been used largely in the city of New York, under all conditions and exposures for the last nine years.

Constant exposure to the sun and atmospheric changes are the severest tests that can be given it in practical use.

## Eminent Electricians and Practical Telegraphists

commend and recognize the Kerite insulation as superior to all others.

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For sale by all dealers in Telegraphic Materials.

For further particulars, address

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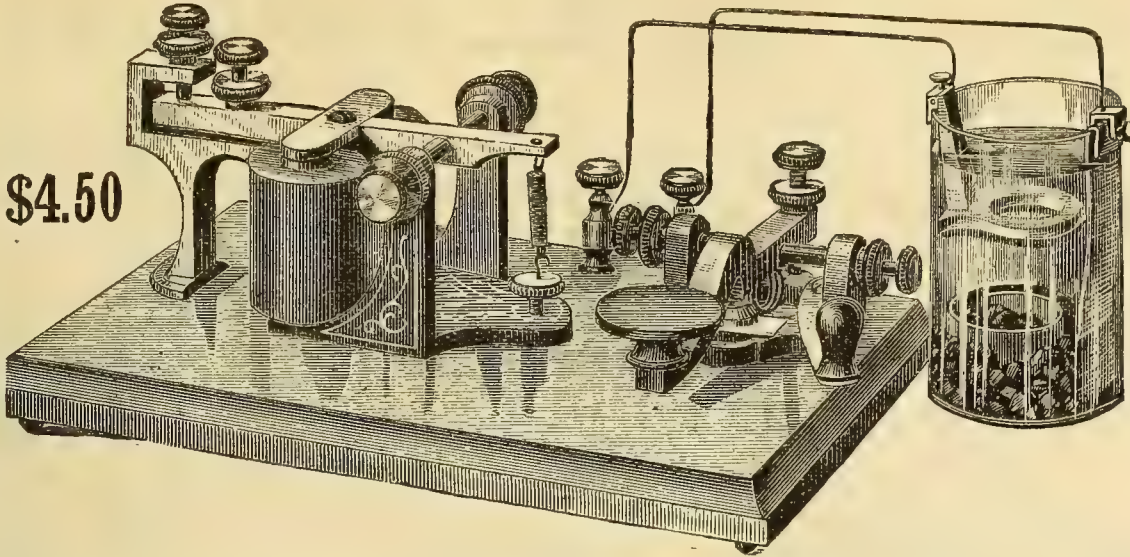
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# THE HOME LEARNERS' INSTRUMENT.

Patented May 1, 1877.

\$4.50



Price for Complete First-Class Outfit, \$4.50 NET CASH.

For the above complete and Perfect Sounder and Key Combined, on mahogany base, including Battery, Chemicals, Wire, Book of Instruction, and everything necessary for a **FIRST-CLASS TELEGRAPH OUTFIT** for the Student's use, for practice **AT HOME**, or for operating **ALL SHORT LINES OF TELEGRAPH**.

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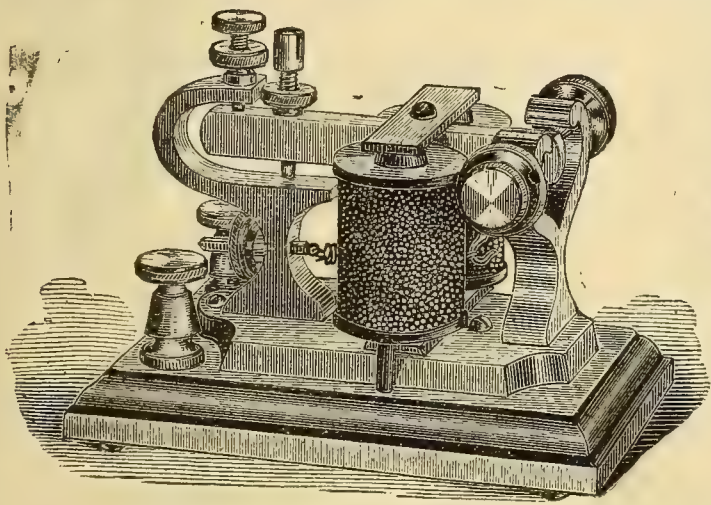
## L. G. TILLOTSON & CO.,

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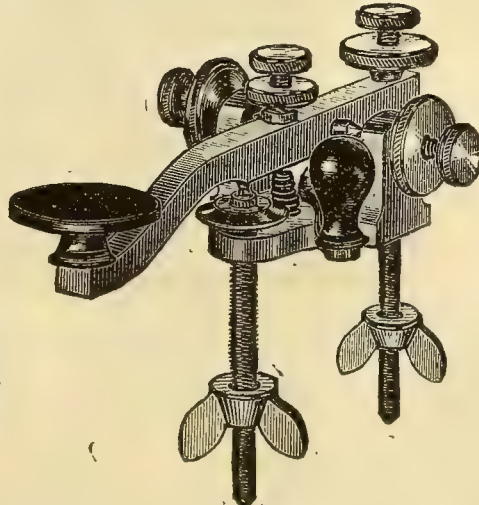
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OF EVERY DESCRIPTION,

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# THE O. K. SOUNDER AND KEY.



O. K. SOUNDER, PRICE, C. O. D., subject to inspection \$4.



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The outfit consists of 1 KEY, 1 SOUNDER, 1 FULL SIZED CELL CALLAUD BATTERY, 1 ROLL OFFICE WIRE, 1 LB. BLUE VITRIOL, 1 DOUBLE CONNECTOR, 1 BOOK OF INSTRUCTIONS.

To those who want a low priced outfit, I will send my

**FAMOUS NO. 2 SHERIDAN, full office outfit, for \$4.25.**

Any of my goods sent C. O. D., with privilege to examine, if you send a guarantee from your express agent that if the goods are as represented you will pay for them.

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THE GREATEST  
TELEPHONE BATTERY.



**PATENT APPLIED FOR.**

As a Telephone Battery, the "LAW" unquestionably excels all others, for the following reasons, viz.:

1st. The cost of renewing is about ten cents per year, as against more than one dollar per year for others.

2d. The cells are all exactly alike.

3d. They continue exactly alike.

4th. They never get out of order.

5th. The first cost is less than any other.

6th. The connections NEVER corrode.

7th. Every part of the battery is exposed to view, and if a fault exists it is instantly seen.

8th. The water cannot evaporate.

9th. The sal ammoniac cannot escape.

10th. The parts are not liable to break.

With the introduction of the "LAW," the objection to the use of a battery in connection with the telephone sinks into insignificance, for the care is nothing, of injury or interruption to the service there is none, and the cost of maintenance is less than one cent per month.

The battery is not an experiment; but an established fact.

It has been in use by the Law Telegraph Company for two years.

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DIRECTIONS FOR USE.—Put in one-half pound of sal ammoniac and fill with water to the shoulder.

**PRICE, \$1.25 PER CELL.**

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## Fire Alarm Telegraph

AND ALL KINDS OF

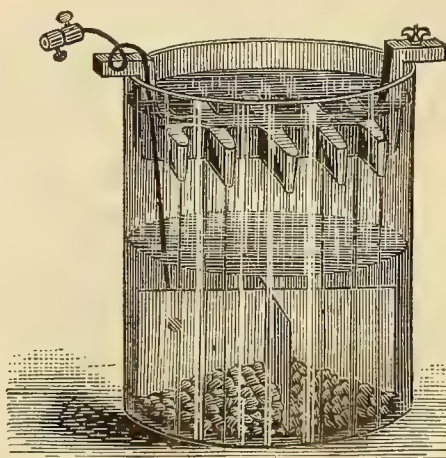
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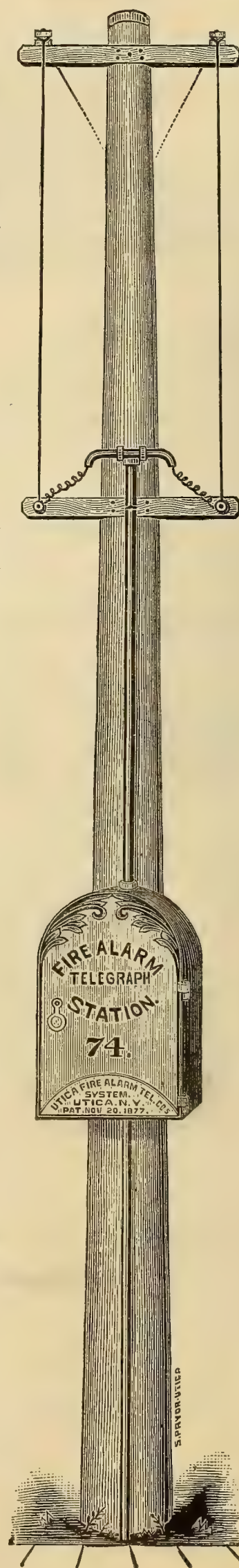
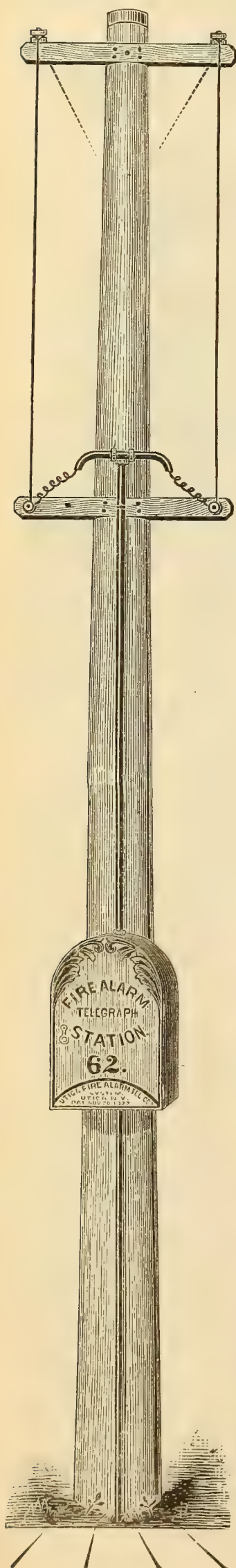
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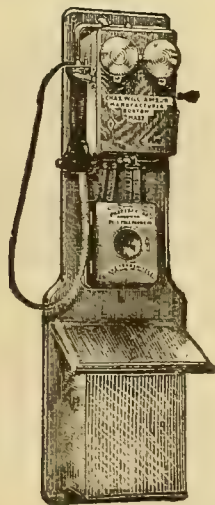
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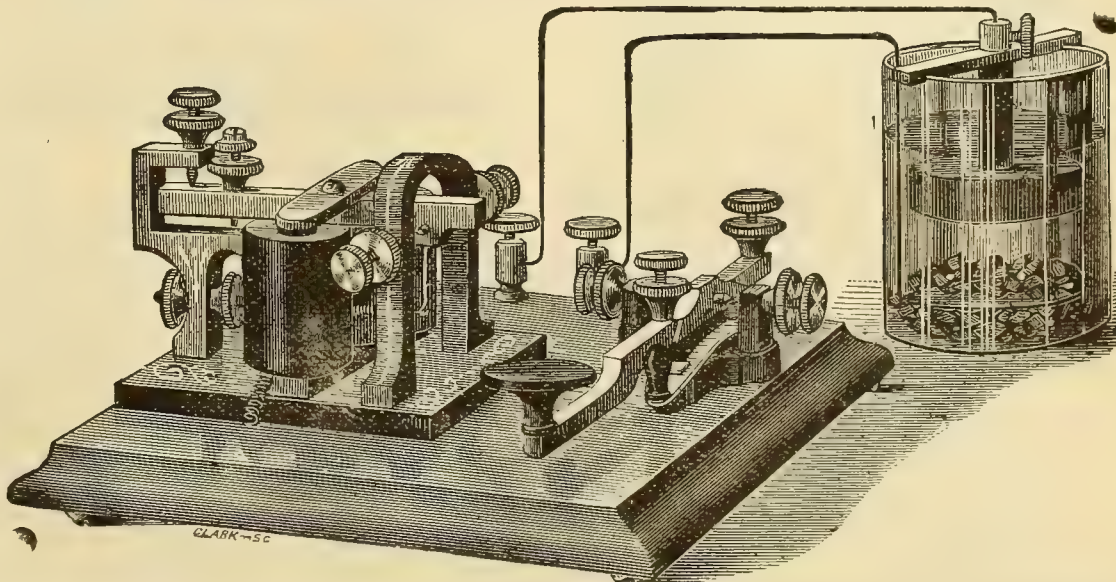
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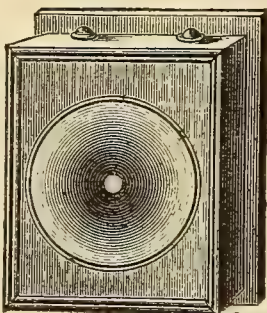
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are now prepared to receive orders for their

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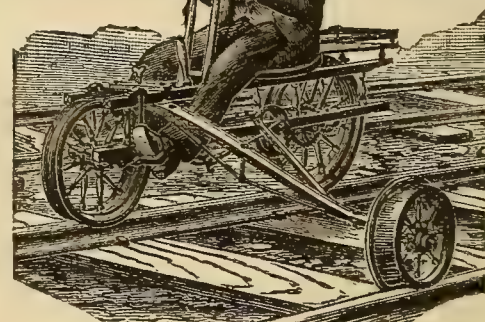
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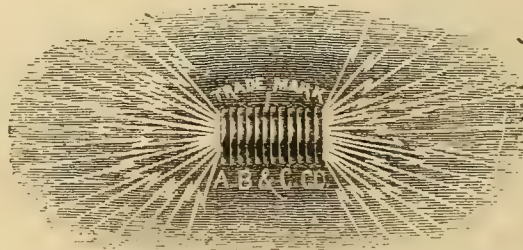


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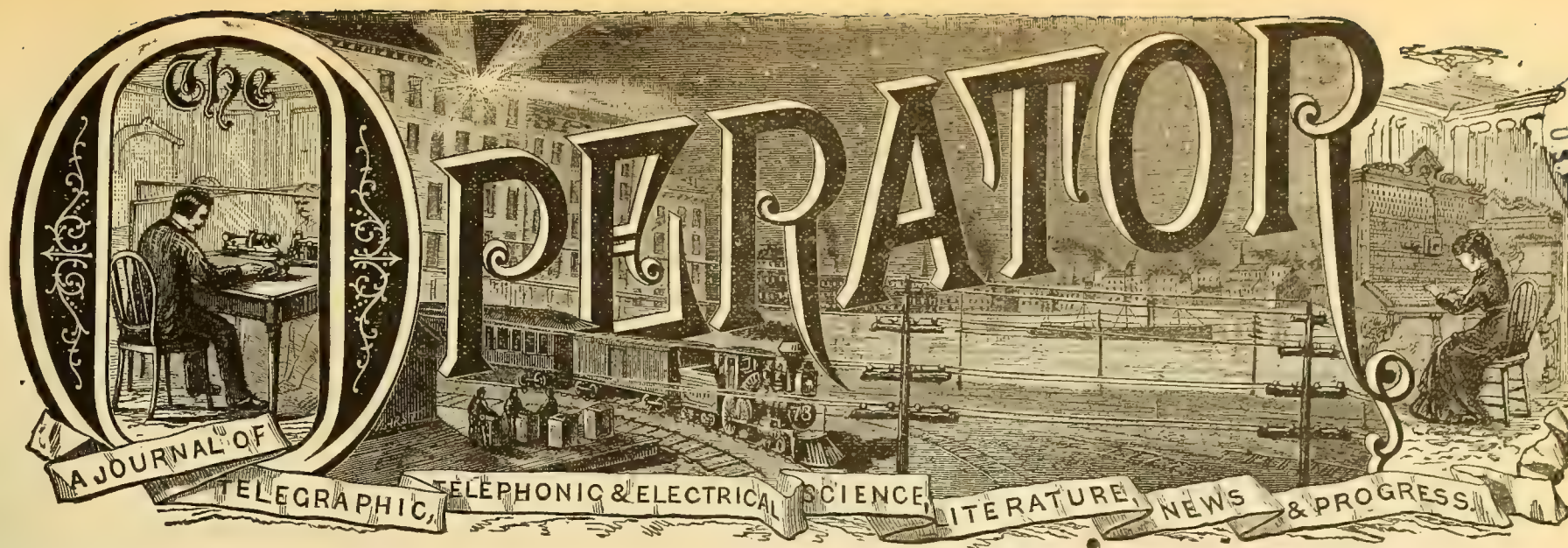
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NEW YORK, OCTOBER 15, 1881.

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{ 5 CENTS PER COPY.

### Western Union Annual Report.

The annual meeting of the Western Union Telegraph Company was held in this city on Wednesday last, Oct. 12. Over 60,000 shares of stock were voted upon. Some comment was occasioned in Wall street and telegraphic circles by the fact that the election was unanimous, and that the new board of directors contains the names of several persons generally supposed not to be on very friendly terms with Jay Gould. The following is a list of the new directors, the first twenty being re-elected and the last nine new members:

Norvin Green, Thomas T. Eckert, Edwin D. Morgan, John Van Horne, Augustus Schell, Harrison Durkee, Jay Gould, Russell Sage, Alonzo B. Cornell, Sidney Dillon, Cyrus W. Field, Edwards S. Sanford, James H. Banker, Moses Taylor, Robert Lenox Kennedy, Hugh J. Jewett, J. Pierpont Morgan, Frederick L. Ames, Edwin D. Worcester, William D. Bishop, C. P. Huntington, George P. Roberts, Zalmon G. Simmons, Samuel Sloan, Erastus Wiman, Amasa Stone, George J. Gould, Chauncey M. Depew, James W. Clendenin.

It was thought by some that Dr. Green would retire from the Presidency of the company at the present election, and be succeeded by General Eckert. The directors, however, held a meeting immediately after the adjournment of the shareholders' meeting and re-elected the following officers for the ensuing year:

President, Norvin Green; Vice-Presidents: Thomas T. Eckert, John Van Horne, Augustus Schell, Harrison Durkee; Secretary, A. R. Brewer. The Executive Committee is as follows: Norvin Green, Thomas T. Eckert, Edwin D. Morgan, John Van Horne, Augustus Schell, Harrison Durkee, Jay Gould, Russell Sage, Alonzo B. Cornell, Sidney Dillon and Cyrus W. Field. The only new member of the committee is Cyrus W. Field.

In his annual report President Green says:

#### THE INCREASE IN CAPITAL STOCK.

The capital stock of the company is \$80,000,000, it having been increased during the year from \$41,073,410, by the issue of \$38,926,590, as follows: \$15,526,590, to the stockholders of the company existing previous to said increase, for that amount of net profits earned by the company since July 1, 1866, which has been applied to the acquisition of new telegraph property, instead of being paid to them in cash dividends; \$15,000,000 for the \$10,000,000 capital stock and \$5,000,000 bonds of the American Union Telegraph Company, at par, and \$8,400,000 for the \$14,000,000 capital stock of the Atlantic and Pacific Telegraph Company, at 60 per cent. Of the capital stock, there is owned by and in the treasury of the company \$20,017.

#### BONDED DEBT.

The bonded debt at the close of the year was as follows:

Bonds due March 1, 1900, 6 per cent.	\$951,102
Bonds due May 1, 1900, 7 per cent.	3,920,000
Bonds due May 1, 1902, 7 per cent.	1,373,000

	\$6,244,102
Less balance of sinking funds appropriations, not yet used for redemption of bonds, held by the Union Trust Company, trustees.	190,855

\$6,053,246

During the year £2,100 of the (sterling) bonds, due March 1, 1900, were redeemed by the trustees of the sinking fund.

#### BUSINESS OF THE YEAR.

Surplus July 1, 1880.	\$403,255
The revenues, expenses and profits of the year ending June 30, 1881, were as follows:	

Revenues.	\$14,060,806
Expenses (including leased line rentals and taxes).	8,420,165
Net profits.	5,640,640

Total. \$6,043,895

From which there was applied:

For dividends.	3,732,633
For interest on bonds.	427,455
For sinking fund appropriations.	40,005

Total. \$4,200,094

Surplus of net revenue for the year, over dividends, interest and sinking fund appropriations, was.	\$1,440,546
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For new property there was appropriated:

For construction of new lines and erection of additional wires.	\$1,041,657
For telegraph stocks and other properties.	674,884

	\$1,716,542
Surplus July 1, 1881.	127,258

\$6,043,895

During more than half of the year for which this statement is made, the company's expenses were largely increased and revenues somewhat diminished by a sharp and litigious competition, and by maintaining the separate organization of the Atlantic and Pacific Telegraph Company under the then existing agreements; and during the latter half, much of the duplicate expenditures for rents, etc., besides extraordinary legal expenditures, had to be borne. The net revenues of the company for fifteen years, including surplus of income account July 1, 1866, (\$275,357) aggregated \$51,266,238. During this period there was paid in cash dividends to the stockholders (including dividend of July 15, 1881) the sum of \$23,533,927.

Summarizing the general statement in round figures, Dr. Green continues, it appears that of the fifty-one and a quarter millions of net profits accruing to the company during the past fifteen years, over twenty-six and three-quarter millions have been paid to stockholders in cash dividends, over seventeen and a quarter millions in stock dividends, six millions for interest and sinking fund on bonded debt, leaving a present surplus unappropriated of one million and ninety thousand dollars.

The business of the year ending June 30 has been exceedingly gratifying. \* \* \* \* \* The revenues have been larger than anticipated, but it has been a year of continued warfare and

legal controversies, involving very considerable expenditures, affecting the net results. It was really near the close of the year before the benefits and economies of the consolidation of the lines of the three companies were fully realized. For the quarter which has expired since the end of the fiscal year for which this report is made, a large increase of net profits is shown, indicating very much better results for the ensuing year.

The Western Union, among other assets, at present owns of the Gold and Stock Tel. Co.'s stock 18,905 shares, valued at \$1,176,009; International Ocean, 15,170 shares. 961,666; Brooks Underground Tel. Co., 1,000 shares. 95,000; Southern Bell Telephone & Telegraph Co., 1,687 84,325; Western Electric Mfg. Co., 1,000 shares. 50,000

After referring to the absorption of the Northwestern, Montreal and Dominion Telegraph Companies, the report goes on:

#### GOLD AND STOCK TELEGRAPH COMPANY.

The capital stock of the Gold and Stock Telegraph Company is \$5,000,000, of which the Western Union Telegraph Company owns \$1,890,500, and the company itself owns \$105,600. Its bonded debt, maturing May 1, 1885, is \$500,000, of which \$65,000 is owned by the company.

Its net profits for the year ending June 30, 1881, were \$412,422.19. During the year there were paid for quarterly dividends, \$200,000; for interest on bonded debt, \$35,000; for construction of lines and purchase of patents, \$70,000. The surplus of the year, of \$107,500, has been invested in telephone stocks.

The earnings of the company for the year were upwards of 7½ per cent. on its present capital stock, above its interest account.

The Gold and Stock Telegraph Company has large and valuable assets in stocks of other telegraph and telephone companies, all of which have been purchased out of the previous profits of the company. Most of these are now paying handsome dividends. Two of them—the American Speaking Telephone Company and the Metropolitan Telephone and Telegraph Company, which have been otherwise applying their revenues—are expected to commence paying dividends the ensuing year at a rate not less than 8 per cent. per annum. Such assets are as follows:

Name.	Portion of cap. stock owned by G. & S. T. Co.	Whole amt. of capital stock.	Rates of dividends now being paid.
Phila. Local Tel. Co.	\$300,000	\$400,000	10 per cent.
Central Dist. & Printing Tel. Co. (Pittsburgh)	82,666	500,000	6 "
Gold & Stock Tel. Co., of California.	287,500	600,000	9 "
Telephone & Tel. Co., of Michigan.	95,100	250,000	8 "
Bell Telephone Co., of Philadelphia.	125,000	560,000	12 "
American Speaking Telephone Co.	1,200,000	1,800,000	
Met. Telephone & Telegraph Co.	400,000	1,000,000	
	\$2,490,266		

#### INTERNATIONAL OCEAN TELEGRAPH COMPANY.

The capital stock of the International Ocean Telegraph Company is \$3,000,000, of which the Western Union Telegraph Company owns \$1,517,-



000, and the company itself owns \$194,600. It has no debt.

Its net profits for the year ending June 30, 1881, were \$229,252.66. During the year there was paid for quarterly dividends, \$196,378, and for construction and other new property, \$5,873.94, leaving the cash surplus at the close of the year, \$152,744.04, or \$27,000.72 greater than it was at the close of the previous year.

The company is now earning and paying at the rate of 8 per cent. per annum on its present capital.

#### ESTIMATE FOR THE ENSUING YEAR.

The gross earnings of the Western Union Telegraph Company for the ensuing year cannot be less than fifteen millions, and the net profits can scarcely fall below six and a half millions. The earnings are now, and have been for the first quarter just closed, at a rate considerably above the figures named. Respectfully submitted,

NORVIN GREEN, President.

#### Progress of the Paris Electrical Exhibition.

[Special Correspondence of The Operator.]

The sad news from America has thrown a gloom over the entire exhibition, naturally deepest about the American section, which has been heavily draped in mourning out of respect to the memory of our dead President. The English and Belgian sections also express their sympathy by drapery, while from all sides come messages and expressions of condolence, showing how deeply interested foreign countries are in our affairs. On Monday, the 26th, the American exhibits were closed up, a privilege that has not been accorded on any other occasion.

The jurors have finally been appointed by the Congress and held their first meeting Sept. 27. They number 150 members, one half of whom are French. This number has been divided into 5 sections, and each section has been assigned to certain groups of subjects, as follows: Section 1.—54 members; magneto-electric and dynamo-electric machines; electric lighting, motors and transmitters of power; boilers, steam, gas, and hydraulic engines applicable to electric industries. Section 2.—40 members; cables, wires, etc., lightning rods; telegraphy, signals; telephones, microphones and photophones. Section 3.—22 members; batteries, etc.; medical applications of electricity; electro-chemistry. Section 4.—14 members; static electricity; measuring apparatus. Section 5.—20 members; instruments of precision, electro and permanent magnets; compasses, electric clocks; miscellaneous.

The American jurors, seven in number, are distributed as follows: Professors Barker, Rowland and Mr. Goodwin, section 1; Professor Carhart (who will be remembered by many New York and Chicago students of electricity) and Dr. Freeman, section 2; and Lieut. McLean and Capt. Heap, section 3. Each of these sections is composed one half of Frenchmen.

The Congress has nearly completed its labors, and will probably adjourn inside of a week. Among the most important of its proceedings is the change made in regard to the units of electrical measurement, which may be briefly summed up as follows:

The practical units, the ohm and the volt, retain their actual definitions— $10^9$  and  $10^8$ .

The unit of resistance (ohm) shall be represented by a column of mercury of a square millimeter cross-section at the temperature of zero centigrade. An International Commission is charged with determining anew the length of such a column of mercury.

The current produced by a volt through an ohm shall be called an ampère.

A coulomb is the quantity of electricity given by an ampère in a second.

A farad is defined by the condition that a coulomb in a farad gives a volt. So the volt acting through an ohm gives a current of an ampère; that is, of a coulomb per second; and a farad is the capacity of a condenser which contains a coulomb when the difference of potential between the two plates is a volt.

It will be noticed that the German name

Weber has been thrown out entirely, and replaced by the French one of ampère, and that the new unit of quantity is called a coulomb, also a French name. One would think that America, with such men as Franklin, Henry, Morse and others, had done enough toward the development of electricity to deserve a place on this list, since it is made up of the names of the leading electricians of different countries. England, Germany and Italy have one name each, while France, with a selfishness that is, perhaps, characteristic, takes the present opportunity, with a Congress composed one-half of Frenchmen, of appropriating two names. If the juries are going to give their decisions with this spirit of egotism, the foreigners have not much to expect where they happen to come into competition with French exhibitors.

The great Edison machine, which is said to run 1,200 incandescent lights, has at last arrived and the bed-plate is already in the building. It is expected to be in running order in a week or ten days, and much interest is shown in the result of the experiment. The Edison people have been given the contract for lighting the Grand Opera-house, and commence running the wires at once. About eight hundred lamps will be required. This is certainly an indication of the high estimation placed upon this system by European electricians.

Dr. Loch-Labaye, of Belgium, has on exhibition an instrument which he calls a pantelephone, that does some very remarkable things. It is nothing more than an extremely delicate microphone, with a Bell receiver. The microphone consists of a thin piece of cork,  $2\frac{1}{2}$  inches long and  $1\frac{1}{2}$  inches wide, suspended by two light springs. In the centre of the cork, at the lower edge, is a hard carbon button, and resting against this button is a brass point. This arrangement is placed in a small box, the front of which is covered with a piece of cloth, to prevent the breath or disturbances in the air from blowing the points apart, and the construction of the instrument is so delicate that it transmits well with the speaker thirty feet away from it. The circuit used is a short one—not more than 100 metres long.

As mentioned before, there is nothing at the Exhibition, so far as I have seen, that is of an entirely novel character, although there is much that has an historic value. Among these latter is the first dynamo-machine, made by Professor Pacinotti, of Italy, in 1863. This is the machine that has created so much discussion on account of the claims made for it of antedating the Gramme machine. Sawyer and others have described it. It certainly contains the Gramme armature, and, as it was given to the world nearly twenty years ago, invalidates the Gramme patents, which a company attempted to dispose of in America a few months ago. Professor Pacinotti now lives at Cagliari, Sicily, and has been before the Congress vindicating his claims of priority. The very efficient Brush machine is constructed with this armature.

The public interest in the Exhibition continues, and the turn-stiles at the entrance are registering from seven to nine thousand admissions daily. On opera nights the crowd is always greatest, and these people will stand patiently in line for an hour or more, for the privilege of about three minutes of the opera through the telephones. The experiment of connecting the Théâtre Français with the Palais de l'Industrie has failed, for some reason or other. The success of this Exhibition is so great that other cities are beginning to show an interest in electrical matters, and notices have been served around of an international exhibition of electricity, to commence at the Crystal Palace, London, Dec. 1, which is, however, being gotten up by private parties and not supported by the English government. Bordeaux also has an exhibition commencing next June, which, until this year, has been international for exhibits of wines and liquors only, but they now propose to make it international for electricity. There always was a family feeling between these two branches of industry.

A dispatch from St. Petersburg, on the 12th inst., says: It is reported that a new conspiracy against the life of the Emperor of Russia has been discovered, Nihilists in the telegraphic service having on various occasions betrayed to the conspirators news concerning the Emperor's intended journeys.

#### Review of the Past Two Weeks.

The knock-down blow given to the Western Union by the President of the Produce Exchange, complaining of bad telegraphic service, seems to have had the effect of bracing them up all around, so much so that the past two weeks have been notable principally for the absence of complaints.

The operators, as a body, have had little or nothing to complain of; and, with the election of the old management, everything promises to go along smoothly for a while.

The annual meeting of the Western Union Co. was held last Wednesday, Oct. 12. President Green's annual report will be found in another column.

In Ottawa, letters patent have been issued by the Secretary of State under the Canada Joint Stock Companies Act of 1877, incorporating David Hatton, of Pererborough, Ont., R. A. Morrow of the same place, T. T. Turnbull, Montreal, G. B. Williams, of Lafayette, Indiana, and John F. Olmstead, of Washington, for the purpose of telegraphic extension throughout the Dominion. According to the charter the company, which will be known as the Canada Mutual Telegraph Company, has power to erect and work lines of telegraphic communication from and to any place throughout the Dominion, either by land or water. The total capital stock of the company will be \$1,000,000, divided into \$10,000 of \$100. The company expects to have lines running into Ottawa by the middle of November.

A good deal of ill-feeling has been manifested between the Western Union and Mutual Union, concerning principally the existence of the "Union Telegraph Construction Company," an alleged side-show attached to the Mutual Union—but there is little in it to interest those not connected with Wall street.

The "underground" people seem to have experienced a grand call to arms, and they display great activity. In Philadelphia especially the work of burying wires underground has been prosecuted with great vigor in the past fortnight.

The continent of Europe is experiencing a grand rush of telegraphic business, due mostly to the warlike operations in Tunis.

Much interest has also sprung up in South American telegraphy. In an elaborate report to the shareholders of the Central and South American Telegraph Company, Mr. James A. Scrymser, President of the company, states that contracts have been concluded for 3,082 nautical miles of submarine cable. Twenty-two miles of cable are being completed daily, and it is reported by the company's electrician to be of very superior quality. No less than five steamers will be necessary to transport the cable and its accompanying material. The first shipment will clear from London Nov. 15, or pay a penalty of \$1,000 per day for each day's delay; the other shipments will follow at fixed dates under heavy penalties for delay. The cable connecting Panama with Callao is to be completed by May, 1882, and it is expected that the whole line will be in commercial operation during the ensuing month of July.

#### A Chronological Sketch of the Magneto Bell, and How to Become Acquainted With It.

The present well-known magneto-telephone signaling bell is an aggregation of different inventions and mechanical movements, all of which have been added as it became evident that they were needed.

When the telephone became a business necessity, a compact, easily managed and easily operated call became also a business necessity.

Some devoted spirits who had got into a deep rut stuck bravely to their system of calling and signaling by breaking and closing the circuit of a galvanic battery. Longer heads, however, early foresaw that this would not do, and that a



motive power which from its very nature demanded a complete rejuvenation every six or eight months was not the motor to make a practical success of the new instrument. It was also evident that a more popular method of signaling was imperatively called for. A vivid realization of what was required set the longer heads to thinking, and the result of the unusual effort was soon seen in the attempt to adapt magneto currents to the end in view.

The first attempts were crude, and, while the signaling currents were indeed generated by a magneto machine, it was a machine much resembling the early apparatus of Pixii and Clark. The generator was connected in one branch circuit at the end of the line, the telephones in another, and the signaling bell in a third, the several branches being connected alternately by an ordinary three-point switch. The generating device was simply a pair of helices flying around in front of a large compound horseshoe permanent magnet, and the ringer was a modification of the ordinary Siemens' polarized relay.

Two troubles were speedily developed in this bell—first, it was difficult to arrange an armature sufficiently delicate to respond promptly to the rapid changes in polarity of the generator; secondly, it was not easy to cause the hammer to strike the bell hard enough to make a loud sound.

It is a well-known fact in natural philosophy that, when there is a problem to be solved or a difficulty to overcome, provided there is, or seems to be, any money in it, the American inventor will be after it, and the chances are ten to one that he will succeed in its solution; for, like Cardinal Wolsey, "No man's pie is free from his ambitious finger." The present case was no exception to the rule.

Finding the ordinary polarized armature to be comparatively ineffective, the first, and still the most important, invention and improvement was made by Mr. Thos. A. Watson, who, instead of clinging to the steel armature, took a new departure by introducing in front of the electromagnet of the ringer a soft iron armature, pivoted at its centre, and being inductively magnetized by the proximity of one or more permanent magnets. This improvement made the magneto bell what it is, by at once increasing its range and making it extremely quick in action, and much less liable to become incapacitated by lightning. The high resistance of the generating coil was now shunted ordinarily out of the circuit by a spring and button, and only cut in when a signal was to be sent.

The next improvement was the incorporation of the automatic switch. The object of this was to change the line from the bell to the telephone by the mere act of removing the telephone from its support. This was first done by H. L. Roosevelt, of New York. The advantage of such an arrangement was so obvious that many had doubtless done this before, and there are now many claimants for the honor of this invention; but, however the priority may stand, there is no question that Roosevelt was the first to protect his right by letters patent.

Just about this time the idea of the necessity of absolute privacy commenced to gain ground, and the secrecy switch of Doolittle and others was the result. This was next applied to the magneto bell, and for a long time was much used.

Soon afterward the battery transmitter was brought into general use, and it was at once seen that to use profitably the Leclanché, or any other open circuit battery, it was necessary to adopt means to close automatically the local circuit, when the transmitter was to be used, and to open it again on the completion of the conversation. This was done by several inventors about the same time, two of whom, Anderson and Briggs, of Cincinnati, patented the improvement, much to the disgust of others. The entire improvement consisted in the attachment of another spring to the ordinary automatic switch.

Shortly after this the Siemens armature was substituted for the old revolving spools, by which

substitution the power of the generator was greatly intensified and the ringing power of the magneto bell at this point was so strong that any bell failing to ring loudly through a resistance of from 6,000 to 10,000 ohms was considered of poor quality.

Other improvements have from time to time been made in the mechanical construction of these bells, and each invention, while frequently futile itself, has pointed the way to something better. The power was first brought to the revolving coils by a gear-wheel driving a pinion fixed on the axis of the armature. This was superseded by a large wheel, the periphery of which was surrounded with a cord of rubber, which, by friction against a similar band of rubber on the periphery of the smaller wheel, revolved the armature. A very short lease of life was granted to this device, as it was soon found that the continued attrition between the two rubber surfaces ground its substance away. It was in turn superseded by the transformation of both wheels to pulleys, which were connected by a short but strong belt of rubber. The present method in use is once more a friction, but this time a rigid wheel of brass, working in a groove arranged on the edge of the smaller wheel, which may either be of metal or hard rubber. A high tension of electricity is obtained by the use of these magneto bells, and it will either ring a bell or drop an annunciator through an extremely high resistance.

The latest improvement in this branch of manufacture is the automatic shunt breaking device. This is an ingenious mechanical movement so arranged that, while the high resistance of the generating coil is ordinarily cut out, as soon as the crank is turned the short circuit is broken and the generator is cut in.

Not many instructions are requisite for the proper management of three bells. In the first place, an amateur telephone man should never undertake to connect a bell in circuit until he can understand its internal arrangements. The first time he gets hold of a new bell he should open it and commune with himself as follows: "This bell is to give a signal from somewhere else, so that for that purpose it must, when the telephone is on the hook, have a complete circuit through the bell magnet from screwpost to screwpost," and forthwith he will trace it out, and if he be wise he will make a diagram of it. "This bell is to be able to send signals to other places; it must, necessarily, therefore, have a circuit from one line screwpost to the other, through the generating coil, when the short circuit around that coil is broken either by a finger button or by the automatic device before described, when the telephone is on the hook." This also he will trace and pencil down. He will say further: "When my telephone is removed from the hook, I must have a line through my telephone and transmitter, while the bell circuit is broken." He will examine and note that. Finally, he will see that his local battery circuit enters the bell for the sole purpose of being opened and closed when necessary, and he will trace the connections for that purpose.

Having thus, as it were, analyzed the bell, he will be better prepared to grapple with any trouble that may arise. When he screws his bell up he will, of course, see that each binding screw is tight, and that a ground wire of thick wire is connected to the ground binding screw; and whenever he inspects the instruments at that office he will not fail to test both the generating and ringing power of the magneto bell.

T. D. LOCKWOOD.

#### Telegraphic Matters in the Quaker City.

During a recent flying visit to Philadelphia we found the representatives of the Mutual Union Telegraph Company actively engaged in fitting up the main office of the new company in that city. The location, which is an excellent one, is in the Times Building, on Chestnut street, a few squares—as they say in Philadelphia—above the Western Union general office. Mr. H. C. Robinson, formerly of the W. U., has been appointed manager of the new company.

The telephone company will soon move its

offices from where they now are (Fourth and Chestnut) to a new building in process of construction across Chestnut street. In their new quarters they expect to be even more pleasantly situated than at present. This is one of the best paying telephone companies that we know of. Mr. W. D. Sargent, the general superintendent, was formerly an old and well-known telegraph man.

Messrs. Partrick & Carter, of 114 South Second street, well-known to the readers of THE OPERATOR, report business very lively. They are turning out large quantities of telegraph and telephone instruments and supplies, keys—especially of the "Lattig" and "Excelsior" patterns—sounders, relays, learners' instruments and the like, as well as of the Fitch Chlorine Battery, of which they are the sole manufacturers. Mr. Partrick is an old-time telegraph operator, and his associates of years ago will, we are sure, be glad to know that the house of which he is the senior partner has been so successful.

Mr. Alfred F. Moore, of 200 and 202 North Third street, manufacturer of insulated wires, says that his business has increased many fold since the advent of the telephone and electric light companies. He adds, however, what is very true, that the competition—if he had said rivalry, perhaps it would have expressed the situation better—in this business has for a long time been so bitter that the profits accruing to manufacturers are very small indeed.

Mr. R. K. Pearce, at 59 South Fourth street, devotes most of his time at present to erecting electric light, telephone and private lines. He keeps two gangs of men constantly at work and does a large and, we hope, remunerative business. Mr. Pearce was formerly an operator in the Philadelphia office, and deserves all the success he may achieve.

Mr. David Brooks, 22 South 21st street, manufactures the Brooks Insulator, now so well known. These insulators are much used in Philadelphia and Pennsylvania, as well as throughout the country. Mr. David Brooks, Jr., at the same number, makes telegraph and telephone cables a specialty.

#### Free Advertising.

We find in the Philadelphia *North American* the following communication from this city. The writer may possibly be "Professor Maurice Keil, M. A., C. E.," though that is not the name signed to it. Anyway, he says:

"In a recent trip in Europe I was delighted to find that young men there were studying a new profession, and one that had not yet become overcrowded. Telegraph engineering is studied as long as our students study medicine or law.

Several telegraph engineers are worth nearly \$5,000,000, having made it all in this new profession. It is one of the few occupations that women are eminently fitted for. We have too many lawyers and doctors. If any of the younger readers of your admirable journal would be interested in this European college of electricity, I should be pleased to give them any information in my power.

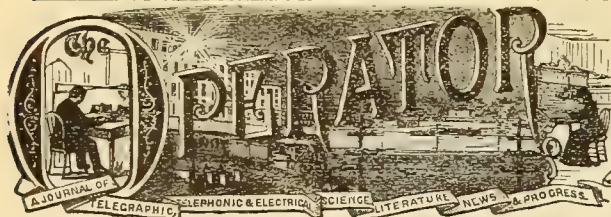
Receive, sir, my distinguished considerations."

A SPLENDID PUFF FROM A METROPOLITAN JOURNAL.

[From the New York World, Sept. 28.]

"In point of fact the average telegraph college—there are some honorable exceptions, but they are very, very few—is a thorough and heartless fraud. For a small sum of money a boy or girl is taught the Morse alphabet after a fashion, and in a few weeks turned loose on the community, utterly without grounding in the elements of telegraphy, to say nothing of that acquaintance with its theory and that familiarity with practical details and the daily life of the world absolutely necessary in an operator. The average telegraph college flaunts a cunningly devised advertisement implying that its graduates are guaranteed employment at lucrative wages, but its dupes are not long in discovering that what they took for a contract is no contract at all, and they are utterly unable to understand why the average telegraph manager prefers a bright messenger who has taken a fancy to the key and from a tender age has been learning office routine and detail, to a diplomé, who must not only learn everything but unlearn everything."





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### THE STRONGEST DIRECTORY.

The announcement of the reelection of Dr. Green, Gen. Eckert, Mr. John Van Horne and the other old officers of the Western Union will be very gratifying to a great majority of the employés of that vast organization. Mr. Cyrus W. Field is reported to have said that the harmonious blending in the new Board of Directors of hitherto conflicting interests forms "the strongest directory in the United States." Let us hope that coming events may prove and emphasize this prediction; and that, considering the company's recent show of kindness and courtesy toward its operators, Mr. Field may soon be justified in adding that it possesses also the strongest, most contented and loyal force of workers in the United States.

In heartily commending the reappointment of these executive officers, one and all, we should also add that it is our duty, as faithful workers, to extend to them all aid within our power to further the improvement of the service; not so much for any one of them as an individual, but as an official of the greatest telegraphic corporation in the world, and as one whose interests are closely woven and interlaced with, and cannot be disassociated from, our own. We have found these executive officers, as a rule— notwithstanding unthought of and unforeseen obstacles in their way—conscientious and fair men, of broad views and wide sympathies, and their conduct toward us as a body has, in the main, denoted a definite, if not always an acceptable, order of conduct, upon the consistency, at least, of which we could depend.

We have had occasion, it is true, to make complaint of the management, but never to our knowledge when the master hand of Dr. Green or Gen. Eckert held the reins. The bumptious small fry, egotistical, insincere and selfish, did undertake for a while to ride the willing horse to death, but our quiet and dignified but firm demand for a halt soon reached the ears of their superiors, and a whirlwind seems to have struck them and their pennywise, pound-foolish schemes. Their unkindest cut, perhaps, came in the written, frank acknowledgment of Gen. Eckert that "Our employés are rendering faithful and efficient service;" and this generous spirit, backed by a not inconsiderable increase of pay in some quarters, and the speedy inauguration of a system of paying fairly for Sunday work, together with a complete wreck of the plan to exact "extra" labor free, have put a wholesome check upon certain influences, which are thoroughly understood in all

quarters, and have prevented the loss of much money and valuable time.

We, therefore, who have as a body only just begun to develop the great strength that has lain latent within us—and which by some persons has, until very recently, been undervalued or ignored—have now abundant opportunity to demonstrate that probity and courtesy are not thrown away upon us. The directory has been declared strong, and it is only meet that we should prove that the working force, when properly treated, is no less strong. We can best attain this end by performing all our duties with scrupulous exactness, for the failure of one branch of the service to bear its proper share of the burden reacts upon the other and higher branch to weaken and diminish the earning capacity of both combined.

There are still some pettifogging officials, who have been aptly called salary scalpers, whose resignations might be demanded for fooling their superiors if for nothing else; and, since resignation is about the remotest idea they entertain, we will pledge the operators to pay by voluntary subscription for the team of horses necessary to drag any one of these canting upstarts from his snug position. We could then go on, without interference, contributing our little mite, as faithful and efficient workers, toward the development of all the wonderful resources of the telegraph, and toward securing all of the benefits to be derived from the natural growth of the country and the steady increase of its commerce.

We sincerely hope that during the coming fiscal year the Western Union may earn all that Dr. Green in his annual report has claimed for it; and that, with the executive ability and fairness of its officials, and the faithfulness and energy of a well satisfied, well paid, competent and thoroughly loyal force of operators, it may soon present not only "the strongest directory" but also the strongest solid organization on the continent.

SOME surprise has been expressed at the spectacle of a twenty-two-year-old boy, Mr. George J. Gould, being placed among the gray-heads of the Western Union directory. If the young man be as level-headed as we would expect the son of Jay Gould to be, and keeps measurably clear of his un-mnemonic partner, Mr. Giovanni Purissimo Morosini, he should be as good a director—as true, as clear-sighted, and as successful as any in the concern. His age has nothing to do with it, for many a man is older at twenty than others at fifty. The patriarch is no better than the adolescent. Cæsar, when he sent his hosts against Cleopatra, was but 18 years of age; Napoleon was Commander-in-Chief of the armies in Italy at the age of 26, and Alexander the Great, who conquered the world and then wept because there were not more worlds to conquer, died at the age of 32. Nor is the sudden transition from one sphere of life to another any bar to success. Semiramis was in Assyrian slavery at one time, and within a single year became a queen, and made her name immortal by the building of Babylon. But, while reading of the three great successful generals spoken of, let this youthful scion of a noble house reflect upon their end. The first—Cæsar—after having conquered 800 cities, and killing his only rival on earth, was miserably assassinated. The second—Napoleon—who issued a proclamation, forbidding the world to trade with England, died an exile on a lonely ocean rock. The third—Alexander—who had his brow encircled with

a chaplet dyed in the blood of millions, set a city on fire and died in a state of intoxication. If Mr. George J. Gould should succeed, we shall be proud to be able to point to one more American Little Giant. We look to our young men as the future masters of our country, and welcome them to their new positions; but when we see the kind of "coaching" they get, it leads us to reflect how wretched sometimes is the ending of all that the world calls great.

THE growth of the telegraph system in Japan has been rapid. It was introduced in 1871, and at the beginning of last year comprised 3,929 miles of line and 9,345 miles of wire. During last year the total number of telegrams reached 1,272,756, of which about 96 per cent. were in Japanese. Including the five submarine cables, the total receipts were £108,323, and the expenditures £101,674. It was the first year when the lines returned an excess of revenue. Operators are trained from among the youths of Japan in a special school recently opened for that purpose. During this year 227 were appointed to positions and 77 still remain under tuition. They are taught to write English and French. For 20 characters in the Japanese language, for a distance of 60 miles, the average rate is about 2 sen, or a little less than 2 cents. This is taking the entire line from Tokio to Nagasaki as a basis. But for shorter distances the rates are higher. From Tokio to Yokohama messages are transmitted for 7 sen, or about 4½ cents. There are 112 offices open for general traffic, besides 70 others connected with the government, the railways or the police. Last year the number of messages transmitted was 1,272,756. There are 348 Morse instruments in use, 26 single needle-blocks, and 29 Bell telephones.

CONTENDING for circuit has hitherto been considered a very harmless diversion for the operators; but, since the boys have got down to duelling with pistols instead of keys and long-range wires, we may look for an abatement of the detestable practice. In our issue of June 1 we recorded the fact of Messrs. Cone and de Fevre, two haughty operators in North Carolina, meeting on the field of honor to fight out with deadly weapons a quarrel over the wires, and of their ending up in an inglorious knock-down-and-drag-out affair. But, as we learn from a dispatch from Denver, Colorado, the operators are more thorough in this kind of work out there. We are told that, on the 7th inst., a controversy took place over the wires between J. S. McBride, the operator at Glorietta, and Jack Handy, the operator at Levy Station. Jack immediately went to Glorietta, and called upon McBride about midnight; but his reception must have been of a decidedly warm character, for his remains were found next morning lying on the office floor. Jack had been fatally shot through the head, while Mr. McBride was missing. There are vacancies for operators at Glorietta and Levy Station, respectively.

THOSE unfortunate telegraphers who have been literally squeezed out of the business since the consolidation, will find an interesting interview with "a prominent official" of the Western Union, reported in the *Chicago Morning News*, of September 12. One of the questions asked was, "Haven't you as many operators as before the consolidation?" And the guileless, truth-telling prominent official replied, with a smile that was child-like and bland, "No. Whenever



there is a consolidation a great many men, in fear of losing their places, drop out and go into other lines of business." Now, in view of the great number of men who have (involuntarily) "dropped out;" of the declaration of Jay Gould's personal organ (September 16) that certain other prominent officials were told that their room was preferable to their company, and the attempt to cut and carve all around, we are reminded vividly of still another prominent official who told us that delicious yarn about the One Man in Charleston. For pure, unadulterated taffy, commend us to your high-toned, sweet-tongued prominent official.

In another column we reprint a tolerably fair specimen of the subterfuges to which certain "teachers" of telegraphy resort to obtain "students." The statement that "several telegraph engineers are worth nearly \$5,000,000, having made it all in this new profession," might mislead many unsophisticated countrymen into wild dreams of wealth. We are glad to see such a clever diagnosis of the telegraph college case as is afforded by the reputed organ of Mr. Jay Gould, *The World*, and which we reprint to-day. If the Telegraph College business must be kept up, let it be done honestly; and, instead of making false promises of fabulous salaries, and throwing out hints about men who have made five million dollars in the business, let them tell the truth; and, moreover, let the unsuspecting dupe understand that telegraphy is, as *The World* aptly says, "A thing which it is always well for a bright boy or girl to learn, but, after all, the prizes in the calling are decidedly few, and to its best members it offers a stepping-stone—a stage in the career rather than a career."

WE have to record once more the "marriage by telegraph" of two idiots in Colorado, who will doubtless obtain their next instalment of notoriety in the Divorce Court. There is much to be deplored in these travesties on the holy bond of wedlock, for the principals are usually unsophisticated and silly creatures; but what shall we do with the alleged minister of the gospel who lends the supposed dignity of his sacred office to such a farce, and consents to sit in a telegraph office, and "marry" a couple, neither of whom he can see or probably ever will see? Every young person, particularly every young girl, should be made to understand that when the hour of tribulation comes there are probably not half a dozen States in the Union where such a "marriage" will, of itself, be held to be valid in law.

THE subscriptions to the fund for Mrs. Garfield and her children close to-day. The committee announces that any subscriptions received after this date will be returned to the senders, with a polite note stating that the Garfield family have all the money they need. For this reason, however much we may regret it, it is impossible that the telegraphers can be represented in it as a body. If the time had been extended so as to afford sufficient notice to the craft, and to admit of replies from all parts of the country, they would have made a very creditable showing. We have received a number of subscriptions from telegraphers, but under the circumstances will be compelled to return the money to the donors.

If it be proved that, as is now asserted, the disastrous fire in Philadelphia last Wednesday night, in which a dozen or more persons were burned to death, originated from a red-hot

morsel of charcoal falling from an electric lamp, the inventors had better get to work to remedy this defect. This new source of danger was first revealed about a year ago, when a falling spark started a fire among some papers in the British Museum; and it was further illustrated last August at the Electrical Exhibition at Paris, when an electric light set fire to the establishment. The electric light is fast making a record which may turn popular prejudice against it.

It is now stated positively that a new submarine cable is to be laid between Thurso, Scotland, and Iceland, via the Farøe Islands. It is proposed to have the general office in Reikjavik, Iceland. There is more in this announcement than most telegraphers would think, since it will form the first link of a chain between England and America, and in which the longest stretch of water is 750 miles. This fact is a good one to remember, for a cable over the ordinary trans-Atlantic route costs at least five million dollars to commence with, not to speak of repairs, and at best lasts only ten years.

THE question of underground wires, which has been agitating the public mind for some time, seems to be in a fair way of solution. In many large cities the work of making the kite-tails feel lonesome by burying the wires underground has been commenced, and a few years at the furthest will see the total abolition of telegraph poles in cities. The companies will find the first cost of underground wires very heavy, but the absence of expenses for repairs, such as are needed after heavy sleet-storms, will make their enterprise profitable in the end.

C. T. R.—Some receivers have the faculty of copying a long way behind the sender—sometimes as much as 20 or 25 words—but we are not aware that any record of such feats has ever been kept, except by tradition. Mr. P. B. Delany, the inventor of the Delany relay, Delany cable, etc., and Mr. Richard O'Brien, superintendent at Scranton, Penna., have possessed this faculty to an eminent degree. It is generally an unsafe way of working, however, and we should advise you to "copy up" as close to the sender as you can.

THE introduction of electric railways into the United Kingdom—the first having been projected for the Giant's Causeway, in Ireland—will be watched with a great deal of interest on this side of the ocean. The estimate that the expenses for haulage on a tramway such as this with horses would be twenty-three cents per mile; by steam about fifteen cents, and by an electrical motor two cents per mile, should not be overlooked by our inventors and investors.

It should not be very difficult to bring about an international understanding with regard to the subject of protecting submarine cables in war time, and the sooner the suggestion made with regard to that matter at the Electrical Congress is carried out the better it will be for the credit of civilization in general and of companies engaged in ocean telegraphy in particular. The commercial and social interests of the whole world are concerned in this question.

THE Czar of Russia has now, as reported in another column, discovered that his telegraph operators have been divulging the secrets of his telegraphic correspondence to the Nihilists. This reminds us of another St. Petersburg dispatch, about two months ago, in which it was stated that the entire telegraphic force at Gatschina had been arrested for treason. At this

rate Siberia will soon be able to organize a telegraphic "Old-timers' Association."

It is proposed in England to solve the question with regard to a suitable motor for a Gramme machine by attaching one to the treadmills in the prisons. Burglars in temporary retirement will thus, in their daily, weary tramp on the "mill," grind out sufficient energy to illuminate a whole town by the electric like; and so, in a measure, put an end to the nightly operations of their fellow-cracksmen who are temporarily at large. Electrical retribution grinds slow but sure.

WITH the present rapid progress of underground wires, the typical telegraph magnate, who had literally "hewn" his way through the world to fame and fortune, will find his occupation gone, and he will have to discover some method of "competing" with a rival company other than by the remarkable possibilities that lie in the axe and the saw.

THE Western Union seems to have done very well during the past fiscal year, and, with the re-election of the same officers, there is no reason why the ensuing year should not be still more prosperous, provided that the enterprising sub-officials, yept salary scalpers, do not get them into another snarl with the Brotherhood of Telegraphers.

TO-DAY, at Paris, the competitive lists for the electric lighting of the Grand Opera-house will close. Other competitions will, however, follow before the contract for lighting that structure is finally given out. We may then learn something definite about the merits of the various systems.

THE coming celebration at Yorktown, Va., reminds us that it was at that place where Mr. D. Brainard Lathrop, the first of our profession to fall a victim to the rebellion, was killed. In entering Yorktown, May 5, 1862, he was fatally injured by the explosion of a torpedo, dying the same day.

THERE are evidences of a great boom in the construction of telegraph in China. The fear of a Russian invasion has taught them the necessity of rapid communication, and it seems as though all the great cities of the empire will soon be united by telegraph.

THE Western Union officials are receiving much well-earned praise for the efficient manner in which they handled the enormous business consequent upon the funeral of General Garfield at Cleveland.

THE election of President George B. Roberts, of the Pennsylvania Railroad Company, to be a director of the Western Union Company, ought to go a long way toward harmonizing the differences between the two corporations.

THE Paris correspondent of the *London Times* says that with proper use the induction balance could have made no error in locating the bullet in President Garfield's body.

THE new Board of Directors of the Western Union is pronounced by Mr. Cyrus W. Field, who ought to know, to be the strongest executive team in America.

THE first number of *La Moniteur Official de L'Electricité* has made its appearance in Paris.

WESTERN UNION stock is quoted at 86½. Last issue it was 86⅞.



### Another Telegraphic Marriage.

For a romantic marriage, a Boston couple are entitled to the first prize. About ten days ago Mr. C. A. Dutton and Miss Nellie J. Throcmorton, both of this city, accompanied by Herman A. Throcmorton and Mrs. H. A. Throcmorton, appeared at the Manitou House at Colorado Springs, and made inquiry concerning the difficulties of ascending Pike's Peak, and in the course of the evening engaged the Rev. Dr. J. Edwards Smith to go with them to the summit of the peak for the purpose of performing a marriage ceremony. Next morning at sunrise six bronchos stood in front of the Manitou House, and in a few minutes the entire party were in the saddle. The Rev. Dr. Smith was mounted upon a particularly lively brute, which, after waltzing on two legs down the road, from the hotel to the bridge over the fountain, wound up his performance by bucking the clergyman over the railing into the stream. Mr. Smith was rescued, and although not seriously injured, the accident deranged the plans of the wedding party, for the clergyman declined to risk his health by continuing the trip, in spite of all persuasion and the offer of a safe and quiet animal. After much consultation, the young gentleman suggested that Dr. Smith should come to Colorado Springs, and from the United States telegraph office, which is connected with the signal station on the peak, perform the marriage ceremony by telegraph. The doctor consented to this arrangement, and thus, by accident, another element of romance was added to this already romantic affair.

The summit was reached about noon, and Sergeant O'Keefe was found in charge of the station. He received his visitors with his usual hospitality, and, when their intention of celebrating a wedding was announced, was overjoyed, and set about making arrangements. The instrument room of the signal station was decorated with flowers and flags, and then the Sergeant seated himself at the telegraph instrument and sent a call down to the Springs office, 10,000 feet below. Officer Jones, who was in charge, replied and informed the Sergeant that the Rev. Dr. Smith had arrived and was ready to proceed with the ceremony. The young people joined hands and stood before the Sergeant, the father and mother of the bride standing on either side, and the Sergeant at the instrument read off the questions of the clergyman as they came thrilling over the wires. There was a rapid clicking for a moment, and then Sergeant O'Keefe, in a solemn voice, repeated the message: "Charles A. Dutton, do you take Nellie J. Throcmorton to be your lawful and wedded wife?" "I do," responded the bridegroom, with evident emotion. The Sergeant tapped the telegraph instrument, and in a moment another message came and was read by him: "Nellie J. Throcmorton, do you take Charles A. Dutton to be your lawful and wedded husband?" "I do," said the bride in a low voice. The Sergeant heard it, however, and transmitted the reply. There was a moment's pause, and then came the solemn concluding words. Up from the valley to that small stone keep, 14,000 feet above the ocean, came that message, making two hearts one: "Then I pronounce you man and wife."—*Denver Tribune*.

### The Moral Influence of the Telegraph.

"One touch of nature makes the whole world kin."

Men have accepted this saying in a broader sense than Shakespeare dreamed. But for a world-wide manifestation of its truth, for a signal demonstration of the kinship of humanity, men have had to wait until science and invention had brought all nations into something like instant communication. It was the touch of the telegraph key, a favorable opportunity being presented, that welded human sympathy and made possible its manifestation in a common, universal, simultaneous heart throb.

We have just seen the civilized world gathered as one family around a common sick bed, hope and fear alternately fluctuating in unison the world over as hopeful or alarming bulletins passed with electric pulsations over the continents and under the seas. And at last, on the same day, the nations stand in sympathetic mourning; a spectacle unparalleled in history;

a spectacle impossible on so grand a scale before, and indicative of a day when science shall have so blended, interwoven and unified human thoughts and interests that the feeling of universal kinship shall be, not a spasmodic outburst of occasional emotion, but constant and controlling, the usual, everyday, abiding feeling of all men toward all men.—*Scientific American*.

### At Long Branch Sept. 6 to 20—Enormous Amount of Telegraphing Done, Notwithstanding the Inadequate Facilities.

To the Editor of The Operator:

SIR: The last two issues of THE OPERATOR have contained extracts from the New York Herald and other papers relative to the telegraph service at Long Branch during the illness of President Garfield, and as no abler pen has undertaken to set matters right, I would like to explain things a little. The President was taken from Washington on the 6th of September by a special train, which left Washington at 6 A. M. and reached Elberon at 1 P. M. Mr. Marean, of the Washington office, left for Long Branch on the night of the 5th, reaching there at 9 A. M. of the 6th. Upon his arrival he found that no preparation whatever had been made for the expected rush. He at once set to work, and by 6 P. M. of that day had three quads set up and ready for work. When it is remembered that the tables and instruments had to be set up, wires run, batteries made and set up, and connections from outside the office made, the magnitude of the work and the promptness of its execution will be apparent. All the material was sent from New York. The operators, eight from Washington, two from Baltimore, and two from Philadelphia reached Long Branch at 6 P. M. on the 6th, and from that time out there was no complaint on the part of any newspaper, correspondent or private individual.

The delay so much complained of on the day of the President's arrival was confined to the press matter filed for the afternoon papers of that day, which was delayed from the causes mentioned above. It was due, probably, to those having the matter in charge not properly appreciating the situation. By the time the officials have experienced two or three occasions of this kind within reach of the Washington correspondents, they will likely take a different view of the thing.

In spite of all the drawbacks, such as the poorest of poor wires, etc., which any one laboring at the key can readily understand, the work at Long Branch during the time the President remained there, and up to the time of the removal of his remains to Washington, was as good as any work ever done in this country. That is big talk, but figures bear it out. On the night of the 6th of September there were sent 102,000 words. The lightest night of all footed up 46,000 words. On the night of the President's death 167,000 words were sent, and on the day and night following 172,000 words, in all a grand total for fourteen days and nights of over one million two hundred thousand words of press matter, exclusive of the government and commercial business which the occasion necessitated. There were 13 men engaged, except on the last day, that of the 20th, when some operators were sent from New York to the relief of the worn out men who had been on duty for 18 to 20 hours at a stretch.

The President died at 10.35 P. M. on the 19th. The large amount of press sent on that night was after that hour, and so well was it done that at no time during the night were the reporters thirty minutes ahead of the operators.

The New York Herald had made extraordinary arrangements, in view of the expected or probable death of the President that night, but they were not called into requisition. Their correspondent telegraphed at 2 A. M. that all the Herald matter was being sent as fast as filed. The agent of the National Associated Press, who sent more than any one else, said that in all his newspaper experience of fifteen years, he never saw such splendid work. All the other correspondents corroborated his statement, and many of them expressed their great satisfaction personally to General Eckert, who was there at the time.

Considering the small number of men, the poor facilities, and the way the press came in for transmission, the record stands unequalled, as far

as I know. The largest amount of press ever sent in a single night from Washington, where they know what heavy press work is, was, prior to the 2d of July, 175,000 words, which was sent on the night of March 4 last. On the day and night of July 2 and 3, the amount sent from Washington aggregated 450,000 words. At Cleveland, with probably fifty operators, a telegraph office, and an unlimited number of good wires, the total for three nights and days was 300,000 words!

The list of men at Long Branch was M. Marean, in charge, E. C. Stewart, D. Marean, F. Marean, H. McKeldin, J. B. Austin, J. T. Stevens, C. F. Braulik and P. B. Tingley from Washington; John Church and E. H. Trainer from Baltimore, and Geo. B. Pennock and S. A. Boyle from Philadelphia, with Messrs. Mitchell, manager, Casey and Dunivan of Long Branch.

Mr. Marean, with Stevens, Pennock, F. Mareau, Hutchinson, Smith, Klotz and Whelpley, also from Washington, went to Cleveland to help out there during the funeral ceremonies; and a force is expected to be sent from Washington to Yorktown, Va., during the Centennial ceremonies of next week.

This letter is only written to set right the men who did such good work, not only for the W. U. but for the country, during a great national crisis, as a good deal of blame for the failure of the first day would be charged to incompetence on their part, were it not explained. They are chargeable with no part of it, but on the contrary deserve great credit for their work, not only on this but on other occasions.

Before leaving Long Branch, Messrs. Presbury & Hildreth, proprietors of the West End Hotel, where the telegraphers and newspaper people had their head-quarters, entertained the party at an elegant champagne lunch, besides having well supplied lunches set out in the temporary telegraph office during the night.

A series of resolutions expressing the thanks of the party to those gentlemen for their hospitality and personal kindness was passed, and will be handsomely engrossed and presented to them.

FAIR PLAY.

WASHINGTON, D. C., Oct. 11, 1881.

### B. & O. R. R., Fourth Division.

To the Editor of The Operator:

SIR.—The force at Grafton, W. Va., the eastern end of this division, is composed of Mr. A. T. Cline, division operator, Messrs. C. H. Brendell, McCabe and Reitz working days, and Messrs. W. P. Cline and J. C. Neham putting at night. S. Myers is agent and operator at Texas. Mr. Myers was married last week to Miss Fannie Carpenter. Mr. J. W. McPeck, known as "the famous John," formerly agent and operator at Texas, folded up his tent and softly stole away—to Cleveland. Mr. K. D. Walker is manager at Fairmont and J. A. Timms night man. Mr. Walker spent a few weeks in the State of Texas recently, but the sunny Southwest didn't agree with him, so he returned to his old post. He is considered a first-class train dispatcher. At Farmington, Mr. W. W. Campbell is agent and operator. He has held this position nearly fifteen years. Mr. S. A. Card is agent and operator at Glover's Gap, and Thos. Campbell night hawk. Mr. J. G. Courtwright, the former operator at Glover's Gap, had to resign on account of ill-health. He goes to Chicago in a few days, where he has three sons, all of whom are first-class operators. At Littleton, Mr. B. E. McCusky and R. E. Wayman hold the fort. W. R. Walker goes it alone at Bellton. Cameron is the dispatcher's office, and Mr. U. B. Williams is the clever dispatcher, assisted by R. Fitzgerald as operator. P. Judge is night dispatcher, but has been confined to his room for the past three weeks with typhoid fever. Mr. R. E. Morling is acting as night dispatcher. S. C. Gons is at Moundsville. T. A. Daily taps the key softly at Benwood. Ed Gannon is the lightning night man. At Wheeling, Mr. Frank Warden is manager, assisted by Messrs. Williams and Leuz. Mr. H. Comerford is night report man. Mr. C. R. Tracy, the former manager, has gone with the W. U., and he is sadly missed by the boys on the 4th. There are several students on this division, who make the wire hideous with their interrogatories and "G. A. — — —." All offices on this division were tastefully draped in mourning, in conse-



quence of the death of the President. We hear rumors of the Mutual Union coming this way. Let it come. O. HIO.

#### Baltimore Notes.

To the Editor of The Operator:

SIR: Since my last communication several changes have taken place. Charley Stewart, one of the oldest operators in the W. U. main office, has resigned and taken a position with the B. & O. Co. Mr. Stewart is a first-class operator, and is highly esteemed by all. W. Thweatt has also resigned and gone with the B. & O. S. J. Sprigg has been appointed assistant day chief in the W. U. main office. Sam is one of the oldest operators in the office, and well deserved the promotion. On Oct. 1 the employees of the American Union Co. presented J. B. Yeakle, their late manager, with a handsome photographic collection of the old men of the office. Mr. Yeakle is one of the best electricians in this section, having served many years with the Western Union and A. & P., and later with the American Union. His present position as general manager of the American District Co. is well chosen, and the company is to be congratulated upon securing such an efficient manager. The B. & O. Co. are fitting up a large office on Exchange Place, and will be ready for business in a few weeks. The Brotherhood of Telegraphers is meeting with success here. Many prominent operators have already joined, and several more are proposed for membership. It is purely benevolent. In case of sickness a member receives six dollars per week. The monthly dues are fifty cents. It denounces strikes, and is not a secret association. Managers and chiefs are invited to attend its meetings.

G. P. Trick, general manager of the B. & O. telegraph system, is in Cincinnati on business connected with the new enterprise which is being established. We regret to announce the serious illness of E. G. Little, operator at Camden Station. EXCELSIOR.

BALTO, Oct. 10, 1881.

#### Cleveland Chronicles.

To the Editor of The Operator:

SIR: In addition to the operators who came here from Long Branch, on the occasion of the President's funeral, we also had the following from neighboring cities to help us out: Messrs. F. G. Brown, South Bend; J. M. Cronenberg and Mr. Springer, Toledo; Charles Wallace and Mr. Bourke, Detroit; C. F. Nighswarider, Sandusky; Mr. Custer, Indianapolis; Messrs. Talcott, Boughan and McGill, Chicago.

On Monday night, Sept. 26, we had 11 special wires to New York, 6 to Chicago, 5 to Cincinnati, 5 to Pittsburgh, and others working direct with Philadelphia, Baltimore and Boston.

In casting a sly glance about, we observe a wholesome smile on the countenances of several and we quietly ask Mr. Wadsworth the cause. He replies: "A raise of five to ten dollars a month, and I am in hopes of raising every man who is deserving." This is the sentiment we like, for low salaries have been the bane of this office for so long that we—smile ourselves.

Among the new faces here are: Messrs. C. B. French, Detroit; E. L. Swift, Indianapolis; E. L. Ross, Cincinnati; E. E. Linn, Warren, Pa.; A. W. Baumgart and W. B. Richardson, New York; W. Ernesthausen and A. Brucht, Chicago; L. H. Hull, Wellsville, O.; W. D. Fuller, Galion, O.; A. W. Jeffers, Chicago, and George A. Leid. Resigned: A. Schmell gone to Pittsburgh, C. F. Patterson to Chicago, D. Hamblin Cincinnati. Mr. E. J. Cox has returned from Youngstown, where he has been relieving Mr. A. C. Baers, who has been on sick list. Mr. S. G. Sinclair, after an illness of several months, has resumed duty and is looking well. Messrs. S. B. Derickson and J. H. Mayer, old Cleveland men, are again with us. Perhaps I have trespassed too much on your space, but — I. DUNNO.

CLEVELAND, O., Oct. 10, 1881.

The fact that the electric light is trying to blondes and favorable to brunettes ought to settle the question of its general use in this land of the free, the Manchester Union thinks, because anything that discriminates against color is contrary to the constitutional amendments.

## TELEPHONE DEPARTMENT.

The citizens of Portland, Me., are now able to converse by telephone with their friends in Lewiston, Me. The line works very satisfactorily.

The Gilliland Electric Manufacturing Company continues to push rapidly ahead. The number of magneto bells of this company's make now in use has risen to 38,500. Yet the telephone is said to be still in its infancy.

Speaking of the telephone in South Australia, the *Electrician*, of Sept. 24 says: "We hear that a telephone line has been erected between the exhibition at Adelaide and the Exchange; also that the government, for the benefit of the public, intends to form a telephone exchange, to be worked under its own control."

Mr. F. A. Gower, who has achieved a world-wide distinction in connection with telephone interests in Europe, visited the rooms of the Providence, R. I., Telephone Company last week and pronounced the Exchange by far the most admirably arranged he had ever seen. He assured the officials that there was nothing in England or France to compare with it. Mr. Gower, by the way, who formerly lived in Providence, has made a generous gift to the Franklin Lyceum of that city, by which that useful institution is now out of debt.

The Compania Electrica de Cuba, capital \$150,000, with right to increase to \$500,000, has been organized under the laws of the State of New York, with headquarters in this city. An exchange is being built as rapidly as possible. The company has now 150 subscribers, and still they come. By a royal decree, issued from Madrid, the company has acquired the exclusive right to establish exchanges and operate the telephone in the Island of Cuba. The officers are Gen. Anson Stager, President; Fredk. M. Delano, Vice-President, and Geo. M. Phelps, Jr., Secretary and Treasurer. The directors consist of the above three gentlemen and Messrs. F. R. Wells and Jas. H. Howard.

## DASHES HERE AND THERE.

Mr. Edison has constructed a dynamo machine—the largest ever made—having a capacity for a thousand or more of his electric lights.

If you want to become a telegraph operator send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.—Adv.

Twenty-seven of the telegraph poles in consecutive order on the Dominion line between Ogdensburg and Morristown were splintered by lightning in a recent storm.

An electric headlight has been successfully used on a locomotive in Australia. It illuminated the track clearly for 500 yards, but the atmosphere there is exceedingly clear.

Messrs. G. W. Pettibone & Co., already so well and favorably known to readers of THE OPERATOR, advertise in this issue an imitation gold hunting case watch at the low price of \$7.

The Congress of Electricians, at Paris, have confirmed the adoption of the ohm as the unit of resistance, and a special commission has been charged with the experiments for determining the exact height of the column of mercury required for the production of the standard.

Brown, Pettibone & Kelly, stationers, 194 and 196 Dearborn street, Chicago, Ill., are sole agents for Farnham's Armaline, the only known cure for writers' cramp and pen paralysis. Its value has been proven repeatedly. Send for circular and treatise.—Adv.

The *Electrician* says that a prize of 1,000 marks (equal to about \$250) is offered by the Electrotechnischer Verein of Berlin for the best essay on the transmission of power by electrical and mechanical means. Essays must be sent in before Oct. 1, 1882. Further particulars as to the conditions of the competition, etc., can be obtained from Herr Julius Springer, Electrotechnischer Verein, Berlin.

Experiments by German scientists in ascertaining the peculiarities of the electric light establish the fact that it is not only healthier than other methods of illumination in leaving the air purer, but that it increases the power of the vision in some respects, especially in distin-

guishing colors. Red, green, blue and yellow are made much more distinct and marked under this light than by daylight.

A dispatch from Cleveland, Ohio, says: The service of the Western Union Telegraph Company, from the arrival of Garfield's remains until the day after the funeral, shows the immense business done for public and private account over the wires. On Saturday, the 24th, 74,852 words were sent; on Sunday, 82,150; on the day of the obsequies, 135,597—a total in three days of 292,599 words. Four-fifths of this matter was transmitted between 9 o'clock and midnight.

A telegram from London, on the 1st inst., said that the ceremony of cutting the first sod on the Giant's Causeway and Port Rush Railroad a day or two previously, at the latter place, was considered an event of great importance in railway enterprise, owing to the fact that it is intended to work the tramway by electricity, the company thus being the first to introduce into the United Kingdom electricity as a motive power for railway propulsion.

The American District, Union District and Domestic Telegraph companies, of Baltimore, Md., have consolidated their respective interests in the American District Telegraph Company of Baltimore City. The company has entered into a contract for a period of years with the Western Union for the delivery of its telegrams and cablegrams, and for the transmission of all telegrams and cables received at any of the offices of the American District by the Western Union. All offices of the American District Telegraph Company are to be branch offices of the Western Union. Mr. J. B. Yeakle, late Manager A. U. Tel. Co., has been appointed general manager of the new company.

At a meeting of the Electrical Congress, at Paris, on the 29th ult., a question was raised in regard to the rights of property in submarine cables. It was stated that at present no government has jurisdiction beyond three miles from the coast, and the cutting of a cable beyond that distance is not a criminal offense. Mr. Siemens, the well-known cable manufacturer, strongly urged the importance of giving some protection to such valuable property as cables. A suggestion of M. Cochery, the French Minister of Posts and Telegraphs, that representations on the subject be made to the different governments, was agreed to.

The Detroit *Free Press* in discussing the condition of the telegraph service says: "Little or no latitude is allowed to the division superintendents. They can scarcely dismiss or hire a ten-dollar-a-week employé without referring it to the home office. This of course destroys ambition, cools enterprise, depresses energy and demoralizes the service. There can be only one end to such methods; but it is not an agreeable prospect to the public to have to wait for it. There will be a reform, or new companies will be formed, or the pressure will be so great that the government will be called upon to take the business in hand. So that the policy is extremely shortsighted and must defeat itself."

So well was everything managed, says a Cleveland dispatch, that no error occurred in transmission by telegraph, notwithstanding that at one time on Monday night over 50,000 words per hour were sent on 38 press circuits from this office, and the promptness with which the business was dispatched surprised all who knew the immense amount of work being done. On Saturday, the 24th, 74,852 words were sent; on Sunday, 82,150; on Monday, the day of the obsequies, 135,597; total for the three days, 292,599. Four-fifths of this matter was transmitted between nine at night and midnight. Beside the regular force here, 25 first-class operators were sent here from Washington, Chicago, Indianapolis, Detroit and Toledo. In the receiving and delivering department more than double the ordinary number of messages were received and delivered each day without any increase of the regular force. All the employes took a personal interest to demonstrate that they could meet any emergency.

The Chinese believe that the falling of any shadow over an ancestor's grave is an insult offered to that ancestor, and, strange as it may seem, this belief is likely to preserve the empire from a nuisance which it will take us many years



yet to get rid of. The dead of a large territory not being collected in any particular spot, but every family having its own graveyard, the telegraph companies who have received charters to construct lines find it exceedingly difficult to place their poles where they will not cast a shade over somebody's great grandfather or mother-in-law. At first, ignorant of the belief of the people on this subject, they undertook to put up the poles along the highways without regard to graveyards. Since then they have learned better, for wherever the Chinaman found a black streak across any grave, he did not wait for the officials to come along and right the matter; he simply proceeded to lay the poles low regardless of consequences. This sort of thing grew rather monotonous for the telegraph people, and now they bury their wires below the surface. China will therefore have the first completed underground telegraph system in the world.

## NEW YORK CITY ITEMS.

### Echoes From 195.

There seems to be a general impression among the operators at 195 Broadway that Mr. Merrihew is a gentleman.

"I am not surprised that he lost his situation," remarked John Lenhart of an ex-Manager of the Western Union; "but the wonder to me is how he ever got it."

Score one for the Continental Telegraph Company. One of its operators at 30 Broad street recently received an office message signed "J. Mocyhow." A repetition rendered it "J. Merrihew." Mr. Merrihew will doubtless object to this manner of torturing his cognomen.

A correspondent at "195," who is not himself personally interested in the matter, complains that since the retirement of Manager Downer, the appointments in the office have not been characterized by as good judgment as formerly. Appointments to chief operatorships, he says, have been made, under the new *régime*, where the persons appointed are not only inexperienced but almost entirely unknown, whereas Mr. Downer's appointments were made from the ranks of the older members who have devoted the best years of their lives to the service. The old and tried men who understand every detail of the business, having made telegraphy a life-long study, and who are practically the backbone of the office, are thus totally ignored when appointments are made; and comparative strangers are called upon to fill the positions rightfully theirs. He adds, however, that perhaps the new management is not aware how these unjust appointments are brought about, and says that investigation will soon convince the most unbelieving that even in a telegraph office practices used only by the lowest politicians are not uncommon, and that unless the gentlemen who deserve the appointments will submit to demoralizing ways their claims of long standing are of no avail.

### Other City Items.

Mr. H. F. Ogden, manager of the Twenty-first street central office of the Metropolitan T. and T. Co., resigned Oct. 1, to go into the electric manufacturing business. The employés of the office presented him with a handsome silver-mounted cane, properly inscribed. The presentation speech was made by Inspector Morris. Mr. Ogden suitably responded. The affair ended with refreshments. It was ably managed by B. Androus, E. G. Brower, E. J. Enright, F. E. Bray and G. Morris, with the assistance of the operators.

We were in error, last issue, in stating that the New York Electrical Society's meeting would be held Oct. 5. The meeting nights are the first and third Thursdays of each month. At the last meeting, which was held in the United States Hotel, Oct. 6, the President, Mr. F. W. Jones, occupied the chair. A paper on "Magnetism" was read by Mr. C. S. H. Small, of the Gold and Stock Telegraph Company. Mr. H. L. Bailey also gave a very pleasing exhibition with the sciopicon. Among the views exhibited were lake and ocean scenes, Thorwaldsen's "Night" and "Morning," an illustration by Doré of Coleridge's "Ancient Mariner," and some humorous sketches. The exhibition was well received, and both Mr. Small and Mr. Bailey

were tendered the hearty thanks of the members present.

On the evening of Tuesday, April 6, 1880, Mr. William E. Sawyer, the electrician, shot ex-Police Surgeon Steele in the head, in the streets of this city. The wound was a serious one, but did not prove fatal. He was convicted of the crime, and sentenced to one year's imprisonment, but was released on \$2,500 bail, pending an appeal. His bondsmen were President Little, of the Electric Manufacturing Company, and Treasurer Anderson, of the same company. Mr. Sawyer, somehow, got into a row with them, and they, on the 30th ult., lodged a surrender piece against him, and he was rearrested and confined in the Tombs. After three days' search he found new bondsmen, and was again set at liberty on the 3d inst.

An enterprising District Telegraph messenger named William Massett, collected \$15 for a Broadway lawyer, on the 13th ult., and de-camped with the money. He made a trip to Rondout, spent the proceeds of his theft freely, and soon found himself with only twenty-five cents in his pocket and no means of reaching New York. In this emergency he hired a row boat for an hour from Joseph Delanoy and rowed down the Hudson until he was overtaken by a propeller, the captain of which towed him to this city. On his arrival he tied up the boat to a North River pier, but the news of the theft had preceded him and he was arrested. In the General Sessions Court, on the 7th inst., Massett, who is only fourteen years of age, pleaded guilty to larceny, and, in consideration of his youth and previous good character, Judge Gildersleeve, instead of sending him to prison, committed him to the Juvenile Asylum.

## PERSONAL.

Mr. Oney Buck, late operator for Chicago & Grand Trunk Ry. at Chicago, is working extra on the Lake Shore & Michigan Southern.

If you want to become a telegraph operator, send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.—*Advt.*

An employé of the Portland, Me., Exchange, Mr. Fred Johnston, recently gave a supper at Biddeford, Me., to the employés of the Old Orchard Beach Exchange.

Supt. Corbett, of Detroit, is receiving deserved praise for the promptness with which he got his men to work, and rebuilt the lines burned down during the recent fires in Michigan.

Mr. A. C. Preble, formerly manager of the Portland (Me.) A. U. Co., is to be manager of the Portland office of the new company. Mr. Preble is now in the main W. U. office, Boston.

General Thomas T. Eckert has purchased the property on Ocean avenue, Long Branch, adjoining that of Mr. George M. Pullman, which was owned by the late Charles Barlow, for a summer residence. The price paid was \$35,000.

Mr. M. M. Joyce, who has been manager and operator of the government and W. U. offices at Fort Leavenworth, Kan., for the past fifteen years, died Tuesday, Sept. 27, at Fort Garland, Col., of congestion of the lungs, after an illness of about two months.

Operators Chas. Cormier, Chas. Fitzgerald, Harry D. Sturtevant and Bob Risdon, of Detroit, all first-class men, have resigned since the first of October to accept better positions. Mr. Fred Schauz, chief clerk, has also resigned to accept a better paying situation at East Saginaw.

Mr. R. E. Mulcahy, a well-known telegrapher, who resigned his position as Superintendent of Telegraph Cincinnati, W. & M. Ry., to accept the General Managership of the Elkhart (Ind.) Car-Works Company, reports that when the works are fully started they will employ 300 men.

Mr. Frank Reynolds, Jr., for nine years manager of the Dominion Telegraph office at Port Hope, Ont., but who was thrown out of employment by the recent consolidation, was the recipient, Sept. 19, of a handsome gold watch, chain and charm, suitably inscribed, as a mark of esteem from the citizens of Port Hope. The mayor made the presentation. Mr. Reynolds is now employed in the W. U. main office in this city.

DETROIT, MICH.—The millenium must be ap-

proaching. The first-class men are fast dropping out of Detroit office. Latest departures: Robert Risdon, Harry Sturtevant, Wm. Dillon, Charles Cormier and Mr. Fitzgerald, all on account of small salaries. Arrivals: C. T. Duffie, Mrs. Tillotson, Mr. Smith and Geo. Withey. The advent of the Mutual Union is expected to again thin the ranks. The small salaries operators at Detroit are receiving bids fair to create continual dissatisfaction. Salaries range from \$10 to \$25 less than other cities are paying; hence the departure of so many of the best operators.

### QUIEN SABE.

Mr. Lawrence Jermain McParlin, of Lockport, N. Y., Greenback candidate for Associate Judge of the Court of Appeals, is a well-known old time telegrapher, and we are sure the members of the fraternity will wish him success. In 1866 Mr. McParlin entered the Western Union office at Lockport as messenger. In a short time he was appointed assistant operator. In 1869 he was appointed Manager of the Atlantic & Pacific office in Lockport; and in 1870 Manager of the same company's office in Buffalo, where his eyesight was somewhat impaired, when he resigned his position and returned as Manager of the company's office at Lockport at an increased salary, but in May, 1871, having saved enough money to carry him through a legal course, resigned his position and studied law. He is now practicing that profession in Lockport.

WORCESTER, Mass.—This office has experienced quite a number of changes within the past few months. Mr. Peter Van Allen, one of our best men, has resigned to accept a more remunerative situation in Boston. W. A. Hennessy, Jr., of New York, has been subbing here while the regular pressmen took their much needed vacation. During his stay, he, by the excellence of his work and the fineness of his "copy," obtained quite a local reputation, besides most favorably impressing the "typos." H. M. Breen, formerly of Boston, and A. D. Brewer, have but recently come among us. The rest of the force consists of P. J. Delahanty and P. J. Cunningham, day men; Wm. Cameron, night manager, and Wm. H. Wheaton, night press. Mr. F. N. Cook, in the absence of Mr. Ryder, is working the day press wire, and Manager E. W. Bradford directs matters as usual.

The Toronto *Truth*, in its leading editorial in the issue of Sept. 17, says some very pleasant things about Mr. H. P. Dwight, the recently-appointed manager of the Great Northwestern Telegraph Company, which that gentleman well deserves. It goes on to say that to Mr. Dwight's business energy, tact and perseverance, which have been conspicuous throughout his whole career, ever since he sent the first message over its wires, some twenty-five years ago, the success of the Montreal Telegraph Co. has been very largely due. He has been rightly styled the Father of Canadian Telegraphy. The successful career which Mr. Dwight has so long enjoyed, and the prominent position to which he has attained, afford another striking example of what ability, earnestness, perseverance, enterprise and good principle will do for a man not born to fortune, nor in any way favored by extraneous circumstances above hundreds of his fellows. No one, *Truth* adds in conclusion, can say of Mr. Dwight that he owes the position which he holds to-day to anything short of an ability and experience of a very pronounced order.

## BORN.

CUSHING.—Oct. 3, to Mr. H. H. Cushing, agent and operator at Keysville, Va., a son.

HAWKINS.—Oct. 9, 1881, to Ed. A. Hawkins, operator, W. U. Tel. Office, Indianapolis, a daughter.

## MARRIED.

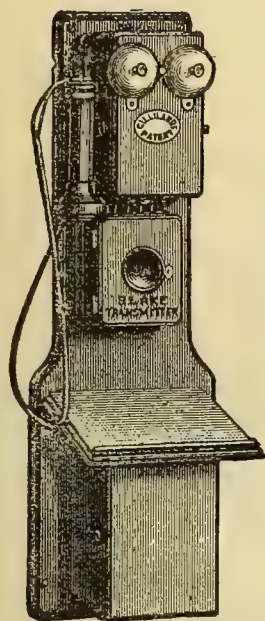
WAFER—HOGAN.—Oct. 9, 1881, at the residence of the bride's parents, Mr. James T. Wafer, for many years operator at Petroleum Exchange, New York City, to Miss Mamie Hogan.

HILL—FIELD.—Sept. 17, at Philadelphia, by the Rev. John E. Johnson, Mr. Charles E. Hill, operator W. U. Telegraph Co., to Miss Lulu M. Field, both of Philadelphia.



# GILLILAND ELECTRIC MANUFACTURING CO.,

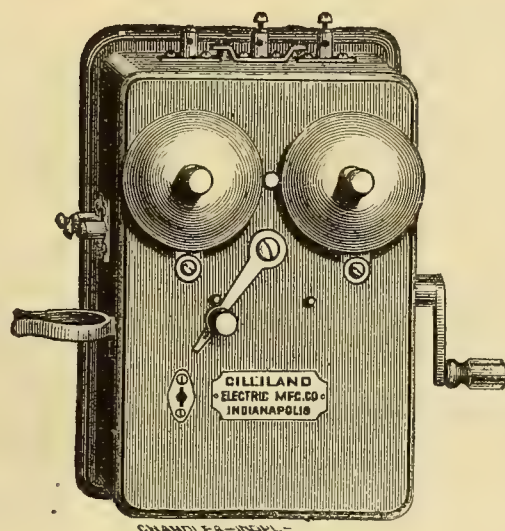
E. T. GILLILAND, General Manager, INDIANAPOLIS, Ind.



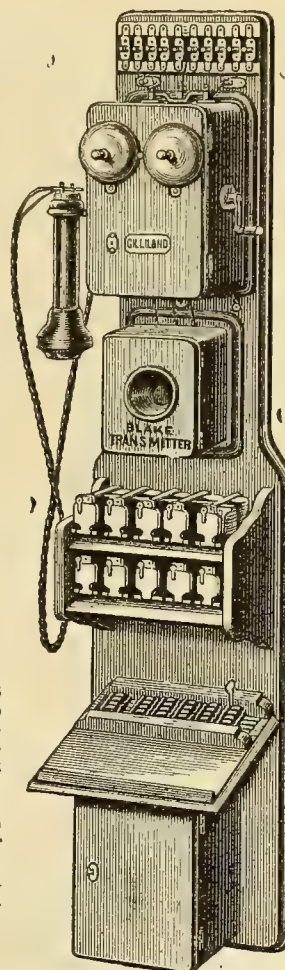
**STANDARD  
Magneto Bell.**

38,500 now in use.

This Secrecy Switch has many advantages over the old style. It can be attached to any or all of our Magneto Bells by a change in the connections and the addition of the Indicator, for in their construction this change was provided for. In all the Secrecy Switches heretofore made, it was necessary to turn the switch every time it was used, but with this latest improved, the Gravity Switch is employed. The Indicator controls the talking, and when set for the Exchange, no further attention is required until desired to talk in the opposite direction. When the Telephone is hung up, the line is restored for the use of others upon the same circuit, the Indicator simply governing the talking. Additional to the superiorities it possesses as a Secrecy Switch, it has an excellent feature in that all of our Bells can be converted from a Gravity to a Secrecy Switch, or vice versa, and provide for the possibilities of the Individual Bell in the future.



**SECRECY SWITCH.  
STANDARD MAGNETO.**



TEN-LINE COMBINATION SWITCH BOARD.

## 10-LINE and 20-LINE SWITCH BOARDS,

For the club system of small towns and villages.

INVALUABLE FOR

State and County Institutions, Hospitals, Factories, Depots, Offices, Stores, etc.

Being complete, compact and handsome our

COMBINATION SWITCH BOARDS are universally used; the demand is extraordinary and continuous, giving satisfaction in every particular.

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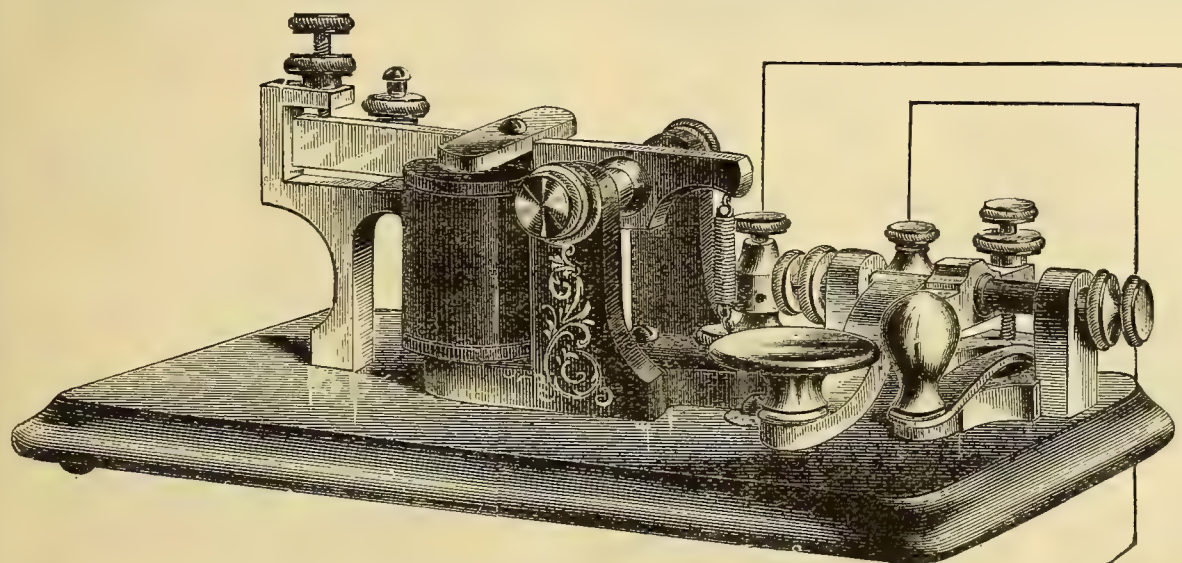
FOR EXCHANGES.

Over 1,200 of our Switch Boards in use in this country and in Europe.

## SUPPLIES OF ALL KINDS.

SEND FOR CATALOGUE AND PRICES.

# THE "MORSE" LEARNERS' INSTRUMENT.



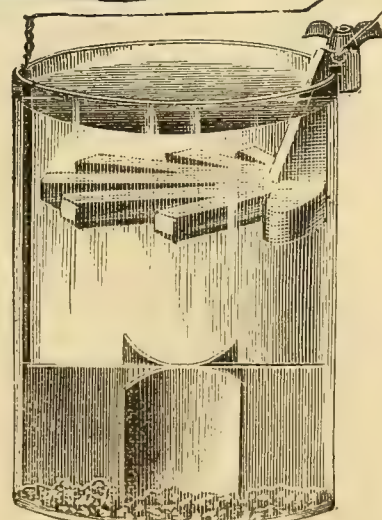
## THE BEST.

Price, \$4.50, complete with Battery, Book of Instruction, Wire, chemicals, and all necessary materials for operating.  
"Morse" instrument alone, without battery..... \$3.87  
"Morse" instrument, without battery, and wound with fine wire for lines of one to fifteen miles..... 4.50  
Cell of battery, complete..... 65  
"Morse" Learners' Instrument, without battery, sent by mail..... 4.30  
(Battery cannot be sent by mail.)

GOODS SENT C. O. D. TO ALL POINTS IF ONE-THIRD OF THE AMOUNT OF THE BILL IS SENT WITH THE ORDER.

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Is a full-size, well-made, complete MORSE TELEGRAPH apparatus of the latest and best form for learners, including handsome Giant Sounder and Curved Key, and a large Cell of the best Gravity Battery, latest form.

It is the best working set of Learners' Instruments for short or long lines, from a few feet up to 20 miles in length.

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IF YOU SELECT THE "MORSE."

We will in every case refund any remittance made us for these goods, if they are not found to be Entirely Satisfactory.

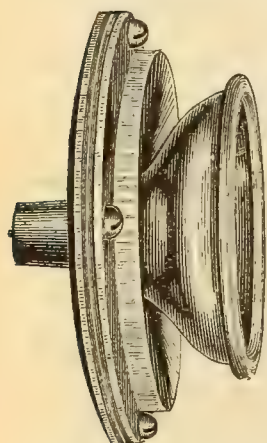
J. H. BUNNELL & CO., 112 LIBERTY ST., NEW YORK.



## "ELGIN" TELEPHONE FOR PRIVATE LINES

(Patented Feb. 22, 1881)

Is Acknowledged the Best in Every Particular by Everybody.



It is made WHOLLY OF METAL, Nickel-Plated and Highly Polished; an ornament to any room or office. It is self-adjusting, requiring no BRACKET or even a screw to hold it in place. It takes the place of the cheap wood and parchment affairs everywhere. Address with stamp for Illustrated Descriptive Circular and Prices,

**ELGIN TELEPHONE CO.,**  
Elgin, Kane County, Ill.

## THE FITCH CHLORINE BATTERY.

Patented April 16, 1879.

The cheapest, cleanest, most economical, durable and decidedly the

**BEST OPEN-CIRCUIT BATTERY** in use for Telephones, Annunciators and Electric Bells. After several years of constant use, it is pronounced to-day as being *far superior* in constancy and power to all other batteries for the above purposes, notwithstanding all statements to the contrary. We have made several valuable improvements in this Battery, among which is the substitution of a *non-corrosive and adjustable clamp*, in place of the old style lead cap, which warrants us in saying that

The Chlorine Battery has no Equal in the Market, and all we ask is a trial.

Price, \$1.50 per cell.

Liberal Discount to the Trade.

**Partrick & Carter,**  
SOLE AGENTS AND MANUFACTURERS,  
NO. 114 SOUTH SECOND STREET,  
Philadelphia, Pa.

Eminent Electricians and Practical Telegraphists

Throughout the World Acknowledge

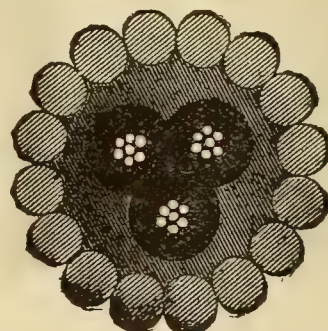
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to be the Cheapest and only PERFECT and RELIABLE

INSULATION FOR

## Telegraphic Wires and Cables

OF EVERY DESCRIPTION.



## THE BISHOP Gutta-Percha Works

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SUBMARINE TELEGRAPH CABLES

50 Regular Sizes—One to Ten Conductors.

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TELEPHONE (LEAD-COVERED) CABLES

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TORPEDO CABLES,

Recommended by the European and South American Governments.

LEAD-COVERED CABLES,

For Canal and Streamlet Crossings.

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OFFICE WIRE, FUSE, LEADING AND CONNECTING WIRE,

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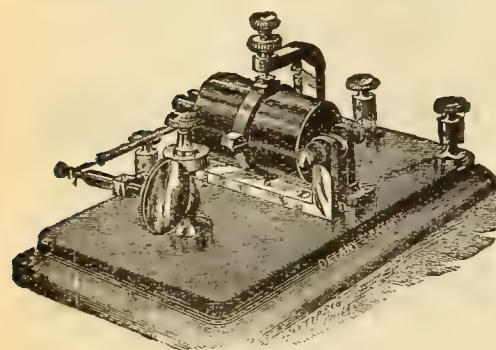
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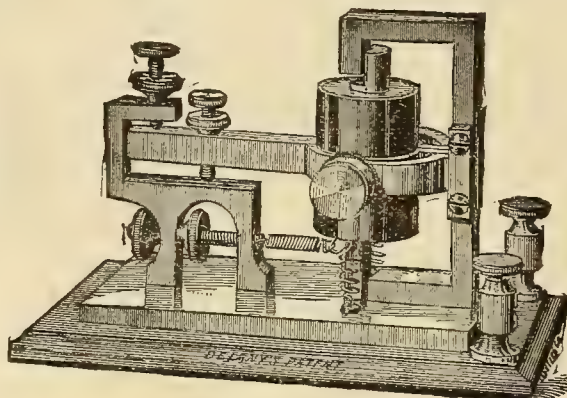
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OFFICE AT THE WORKS.

## THE DELANY RELAY AND SOUNDER.



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The above cuts illustrate the Delany Patent Telegraph Relay and Sounder, now being manufactured and tested with a view to their general introduction on all Telegraph Lines liable to be affected by the Page Patent. These instruments are in all respects superior to any now in use.

Railroad companies and others desiring instruments for trial should apply to

**THE DELANY PATENT RELAY COMPANY,**  
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**FOOD CURE**  
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A SURE NATURAL REMEDY

For all forms of DYSPEPTIC, WASTING  
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**FOODS** For the **BLOOD, BRAIN AND NERVES**  
FREE FROM DRUGS.  
PRESCRIBED BY THOUSANDS OF EMINENT PHYSICIANS.

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DR. BLANCHARD CONSULTED FREE, IF POSTAGE IS PREPAID.

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**The Fibrin and Wheat** restores the confirmed dyspeptic stomach and cures all forms of long standing nervous debility. Vitalizes weakly children and energizes old age. Sure preventive and cure for diphtheria, infantile diarrhoea and cholera infantum. \$2 each, or six bottles for \$10. Sample bottle \$1.

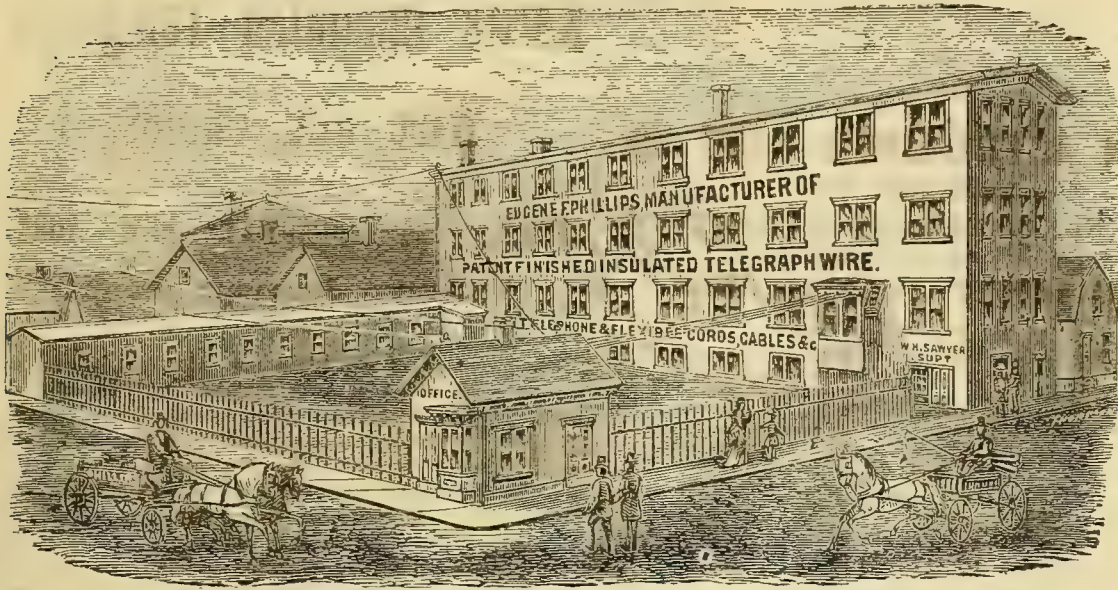
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## PROVIDENCE, R. I.



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## Insulated Telegraph Wire

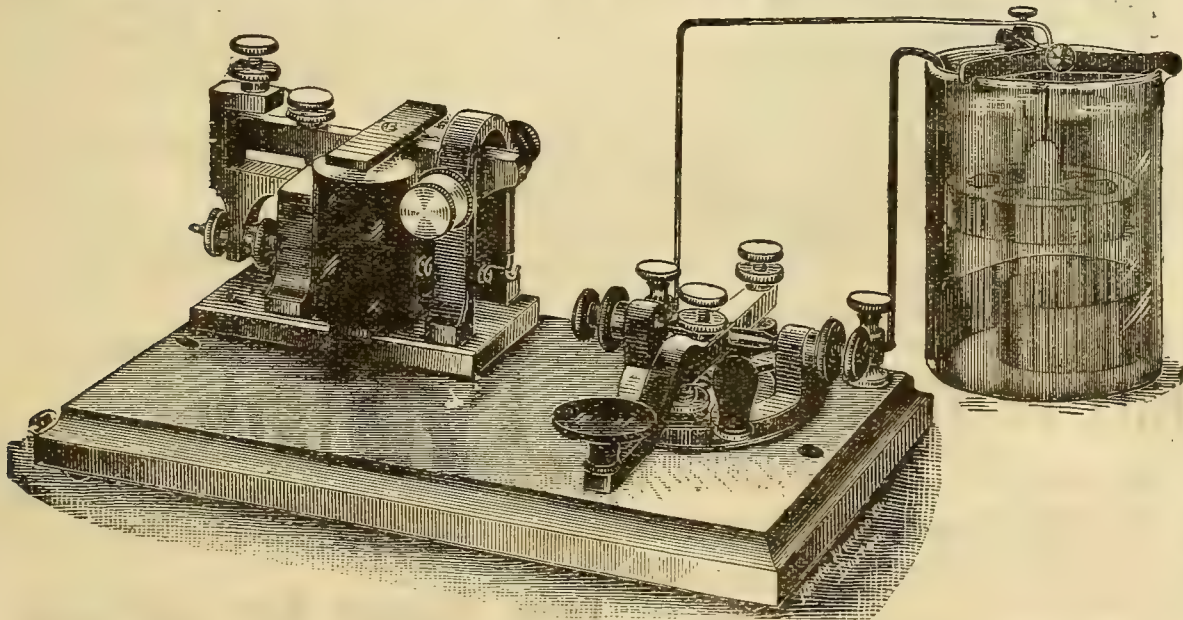
TELEPHONE AND ELECTRIC CORDAGE.

### MAGNET WIRE,

PATENT RUBBER-COVERED WIRE, BURGLAR ALARM AND ANNUNCIATOR WIRE, LEAD-ENCASED WIRE, CABLES, ETC.

W. H. SAWYER, Electrician and Superintendent.

## JEROME REDDING & CO.'S LEARNERS' INSTRUMENT.



PRICE FOR THE COMPLETE "GEM" LEARNERS' OUTFIT, \$4.20.

Consisting of the above large-sized Sounder and Key, a good Cell of Callaud Battery, one roll of Office Wire, Book of Instructions, Chemicals, etc. The only low-priced Learners Instrument made that has nicely finished **BRASS** Sounder and Key lever, with perfect adjustments for both.

Price for Complete Outfit.....	\$4.20	Price for Instrument alone, by mail, post-paid.....	\$4.00
" Instrument alone.....	3.40	" Instrument alone, for lines 1 to 15 miles.....	4.00
" the whole outfit (except Glass Jar) with Key		Price for Instrument alone, for lines 1 to 15 miles, by	
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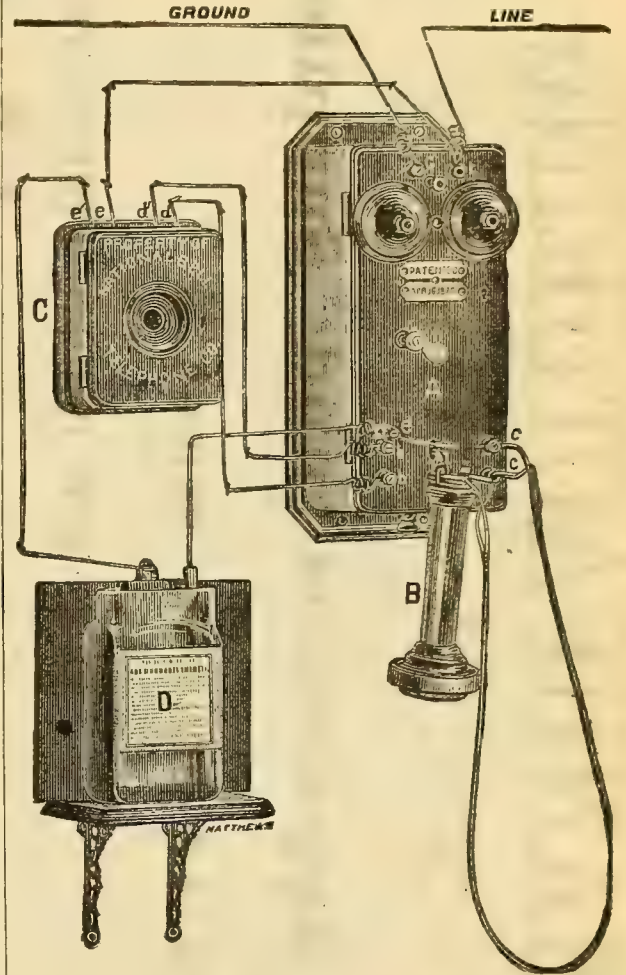
**JEROME REDDING & CO.,**

Manufacturers of Telegraph and Electrical Supplies,

No. 30 Hanover Street, Boston, Mass.

## The American Bell Telephone Company.

W. H. FORBES, President. W. R. DRIVER, Treasurer  
THEO. N. VAIL, General Manager.



This Company, owning the Original Patents of Alexander Graham Bell for the Electric Speaking Telephone, and other patents covering improvements upon the same, and controlling, except for certain limited territory, under an arrangement with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, the American Speaking Telephone Company, and the Harmonic Telegraph Company, the patents owned by those companies, is now prepared to furnish, upon application, either directly or through any of its agents, Telephones of different styles, and applicable to a variety of uses.

This company desires to arrange with persons of responsibility for establishing

### District or Exchange Systems,

in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

### PRIVATE LINE AND CLUB LINE

systems, for business or social uses. Also to introduce the telephone for

### SPEAKING TUBE

purposes, for which instruments will be leased for a term of years at a nominal rental.

This Company will arrange for telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

We respectfully invite attention to this matter, and any further information relating thereto can be obtained from the Company,

NO. 95 MILK STREET, BOSTON, MASS.

All persons using Telephones, not licensed by this Company, are hereby respectfully notified that they are liable to prosecution, and for damages for infringement, and will be prosecuted accordingly to the full extent of the law.



# WESTERN ELECTRIC MANUFACTURING CO.

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Telegraph and Telephone Apparatus and Supplies.

THE BEST OF EVERYTHING AT BOTTOM PRICES.

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Manufacturers of

### GALVANIZED TELEGRAPH WIRE

OF ALL QUALITIES.

No. 6 Wire in  $\frac{1}{4}$ -mile bundles, 550 pounds per mile.  
No. 7 Wire in  $\frac{1}{4}$ -mile bundles, 470 pounds per mile.  
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No. 10 Wire in  $\frac{1}{4}$ -mile bundles, 268 pounds per mile.  
No. 11 Wire in  $\frac{1}{4}$ -mile bundles, 216 pounds per mile.  
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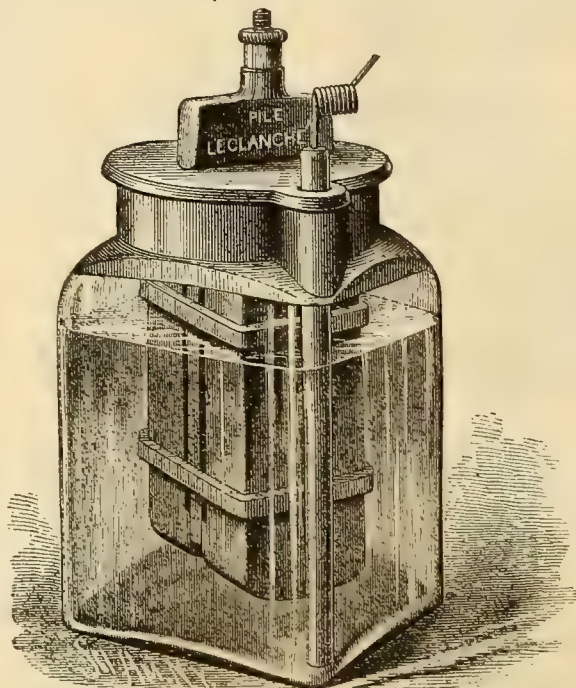
This Wire possesses the highest electrical conductivity, which is necessary to make Telegraph and Telephone Lines work with certainty and ease.  
Special attention given to

#### Telephone Wire,

for which No. 12 is the average size used.

## Leclanche Battery.

(PATENTED.)



"Prism Battery" Complete.

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## GREAT TELEPHONE BATTERY.

The Realization of

**SIMPLICITY AND EFFICIENCY**

### In Electric Open Circuit Batteries.

Free from acid. Emits no odor. Does not get out of order. Lasts without renewal from six months to several years, according to use.

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American Bell Telephone Company.  
Metropolitan Telephone and Telegraph Company.  
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And by all the Telephone Companies and Exchanges in the United States.

The attention of the public is called to the new form of Leclanche Battery, in which the porous cell is dispensed with and for it substituted a pair of compressed Placques or Prisms, which are simply strapped to the Carbon (as shown in cut).

The Prism Battery is more easily and cheaply cleaned and renewed than any other battery. Beware of

**Infringements and Worthless Imitations.**

Every genuine Leclanche Battery has the words **Pile-Leclanche** stamped on the carbon head, jar and prisms. All others are spurious.

"Prism" and Porous Cell Batteries for sale in any quantity. Zinc and Sal Ammoniac of superior quality.

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## Kerite Insulated Telegraph Wire and Cables.

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Factory: Seymour, Conn.

The discovery of the insulating compound, known as Kerite, is the result of more than ten years of uninterrupted experiment and application, as well as twenty years' previous experiment and experience in the manufacture of India-rubber. About ten years of this time was spent in assisting Mr. Charles Goodyear in the experimental department, while perfecting his improvement in vulcanized India-rubber and its varied applications.

The necessities of the telegraph business requiring an indestructible insulation, stimulated me to the discovery and perfecting of my compound known as Kerite, which combines the great advantage of durability with perfect insulation.

Kerite insulation is proof against the action of the corrosive elements in the earth, air and water; and, where it has been practically tested, has proved its superiority to all other insulation.

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It is not injuriously affected by the extremes of heat and cold, experienced in our climate, nor by length of exposure in the atmosphere.

It will endure long-continued heat below two hundred degs. Fahrenheit, while for short intervals it may be subjected to from two hundred and fifty to three hundred degs.; and it may be safely immersed in boiling water.

The action of water, salt or fresh, not only protects all its qualities, but very much improves its insulation.

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There are thousands of miles in use throughout the country, by Fire Alarm and other Telegraph Companies of all our principal cities.

It has been used largely in the city of New York, under all conditions and exposures for the last nine years.

Constant exposure to the sun and atmospheric changes are the severest tests that can be given it in practical use.

## Eminent Electricians and Practical Telegraphists

commend and recognize the Kerite insulation as superior to all others.

At the Centennial Exhibition at Philadelphia, SIR WILLIAM THOMSON, the eminent electrician and scientist, awarded to the

## Kerite Insulated Wire and Cables A DIPLOMA FOR

"Excellence of the Insulation and Durability  
of the Insulator."

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Cut Shows  
the  
Exact Size  
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the Watch.



## HUNTING CASE WATCH IMITATION GOLD!

We now offer to the readers of this paper a first-class watch in every particular. Heretofore a low-priced watch has been the poorest of investments, being of no value as a time-keeper, and a constant source of annoyance and expense to its owner. The Watch we offer you is a marvel of accuracy and cheapness, and we are now, for the first time in the world's history, able to offer a low-priced, perfectly reliable Watch, suitable for use on Railroads, Steamers, and other places where accurate time is required. The annexed cut shows the exact size of the Watch; the movements are nicked and Swiss make, known the world over for their excellency and fine finish. The case is finished from a composition of metals so closely resembling Gold, that it is almost impossible for the best judges to distinguish the difference. It is the best substitute for Gold ever discovered and will stand the acid test. There is now a growing demand for just such a watch, and we propose to sell a limited number at a special low price, and we believe the vast army of Professional Men, School Teachers, Mechanics, Farmers and Laborers, will appreciate this bargain, and continue to purchase from us other goods, as shown in our Illustrated Catalogue.

**OUR GRAND OFFER!** In order to more thoroughly introduce our goods in the United States, we make the following unprecedented offer: Upon receipt of only \$7.00 and this advertisement, we will forward, all charges prepaid, and guarantee to reach you in good order, one of the above described watches, securely packed in a wooden case.

We can only send out a limited number of these watches at price named, and to protect ourselves from jewelers and others ordering in quantities, we will insert this advertisement in this paper but one time, hence, require you to cut it out and send to us with your order, that we may know you are entitled to the benefits of this offer. Under no circumstances will we sell more than one watch at above price to any one person, but if others are desired we will furnish them at regular catalogue price. Many of our agents sell this watch at from \$20.00 to \$35.00. We will mail you a catalogue at same time we send watch, and feel sure you will be so well satisfied that you will show catalogue and watch to your friends, thus assisting us in selling other goods of standard quality, which are manufactured from new and original designs, and which we guarantee to give satisfaction. We will be responsible for money if sent by Registered Letter, P. O. Money Order, or Draft made payable to our firm. We will send the Watch C. O. D. with privilege of examination, provided you send \$2.00 to guarantee us against loss by express charges; but if you send us full amount with your order, we will prepay all shipping charges and ship watch on day order is received. As to our responsibility, we refer you to any Bank in this City. If you do not order at once preserve this advertisement for future use. If you send us \$1.00 extra when you order Watch, we will send a handsome Watch Chain and Charm made from a composition metal resembling Gold.

Address **G. W. PETTIBONE & CO., No. 25 Maiden Lane, New York City.**

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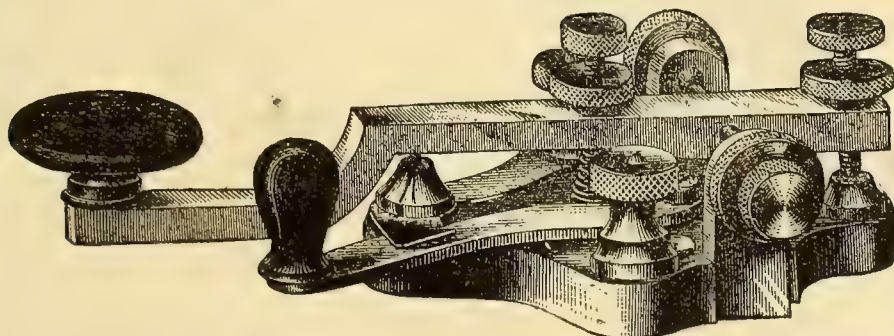
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Patent solicitation and litigation exclusively, in all its branches. Electricity a specialty.

## NEW LEGLESS KEY.



PRICE \$4.00.

The most perfect and beautiful legless key yet offered to Telegraphers is represented in the above cut. This key combines the advantages of the best made keys with the convenience of top-connection. It is without question the neatest and most satisfactory legless key in the market.

Sent post-paid by mail on receipt of price.

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OF EVERY DESCRIPTION,

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## THE LAW BATTERY.

THE GREATEST  
TELEPHONE BATTERY.



### PATENT APPLIED FOR.

As a Telephone Battery, the "LAW" unquestionably excels all others, for the following reasons, viz.:

- 1st. The cost of renewing is about ten cents per year, as against more than one dollar per year for others.
- 2d. The cells are all exactly alike.
- 3d. They continue exactly alike.
- 4th. They never get out of order.
- 5th. The first cost is less than any other.
- 6th. The connections NEVER corrode.
- 7th. Every part of the battery is exposed to view, and if a fault exists it is instantly seen.
- 8th. The water cannot evaporate.
- 9th. The sal ammoniac cannot escape.
- 10th. The parts are not liable to break.

With the introduction of the "LAW," the objection to the use of a battery in connection with the telephone sinks into insignificance, for the care is nothing, of injury or interruption to the service there is none, and the cost of maintenance is less than one cent per month.

The battery is not an experiment; but an established fact.

It has been in use by the Law Telegraph Company for two years.

The materials used in its construction are the very best. No acids. No odors. Great recuperative power. Nothing to renew except the zinc and sal ammoniac—no porous cup, plaque or prism. Fits the standard size battery-box.

The Bell Telephone Co. of Missouri writes: "We have been testing the 'Law Battery' for several months in our telephone circuits, in competition with the various styles of Leclanché and Callaud batteries. For transmitter work the 'Law' excels all others in uniformity of action. As a result of the test referred to, we have concluded to adopt the 'Law.' We have upward of 250 cells now in use."

DIRECTIONS FOR USE.—Put in one-half pound of sal ammoniac and fill with water to the shoulder.

PRICE, \$1.25 PER CELL

Manufactured and for sale by the  
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MANUFACTURERS OF

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AND ALL KINDS OF

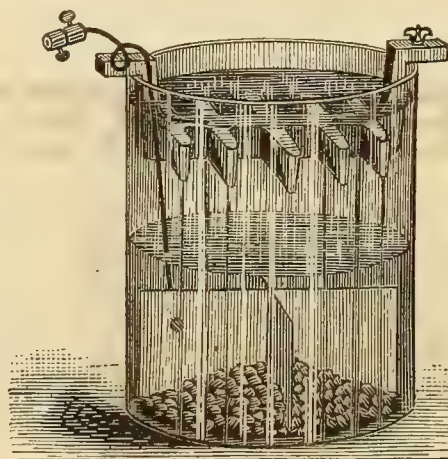
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AND GENERAL DEALERS IN

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**SPECIALTIES OWNED AND CONTROLLED BY US.**—The only Electro-Mechanical Non-Interference Fire Alarm Telegraph Signal Box. The only Electro-Mechanical Balanced Hammer Tower Bell Striker. The only Electro-Mechanical Anti-Adjustment Gravity Armature Gong Strikers.



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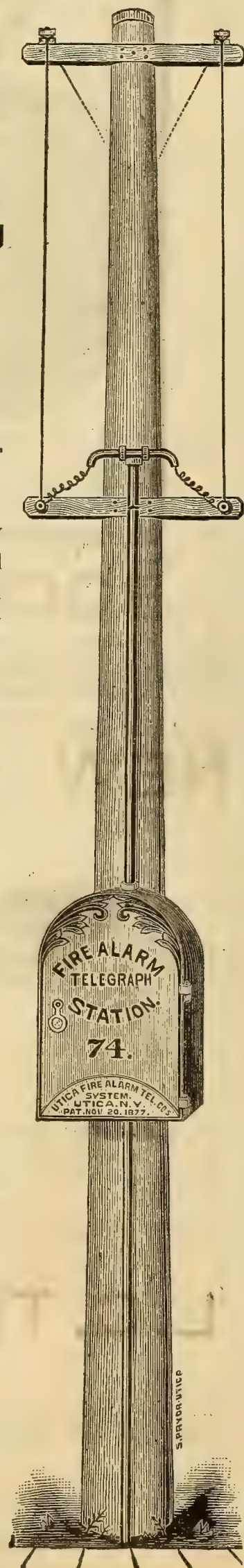
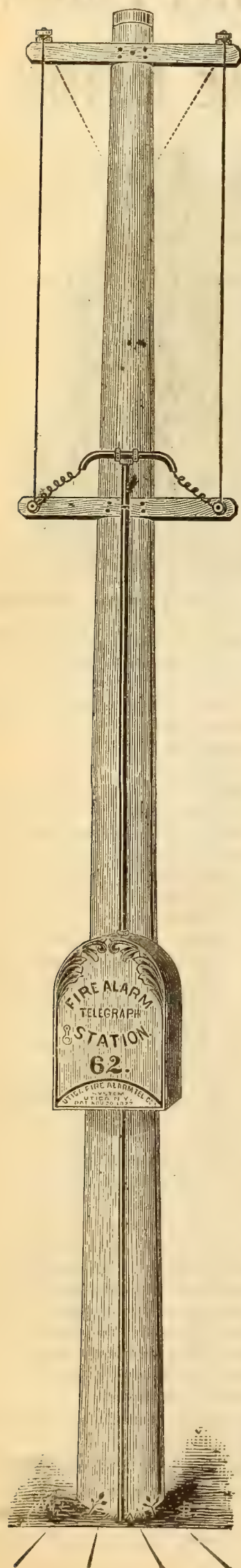
### ELECTRO-MECHANICAL NON-INTERFERENCE SIGNAL BOX,

which was invented by us, was patented by us and is controlled by us. It simplifies non-interference; and thereby makes it practical. Electro-Mechanical Gong Strikers for Engine Houses and Engineers' use; Electro-Mechanical Tower Bell Strikers for all sizes of bells—the only Balanced Hammer Tower Bell Striker in existence; Automatic Repeaters for any Number of Circuits; Switch Boards, Galvanometers and all materials for the equipment of Fire Alarm and other Telegraph Systems.

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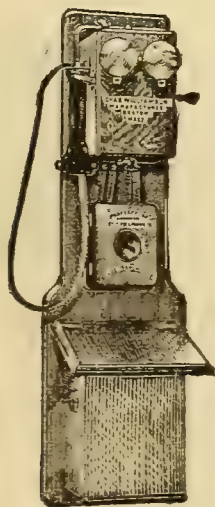
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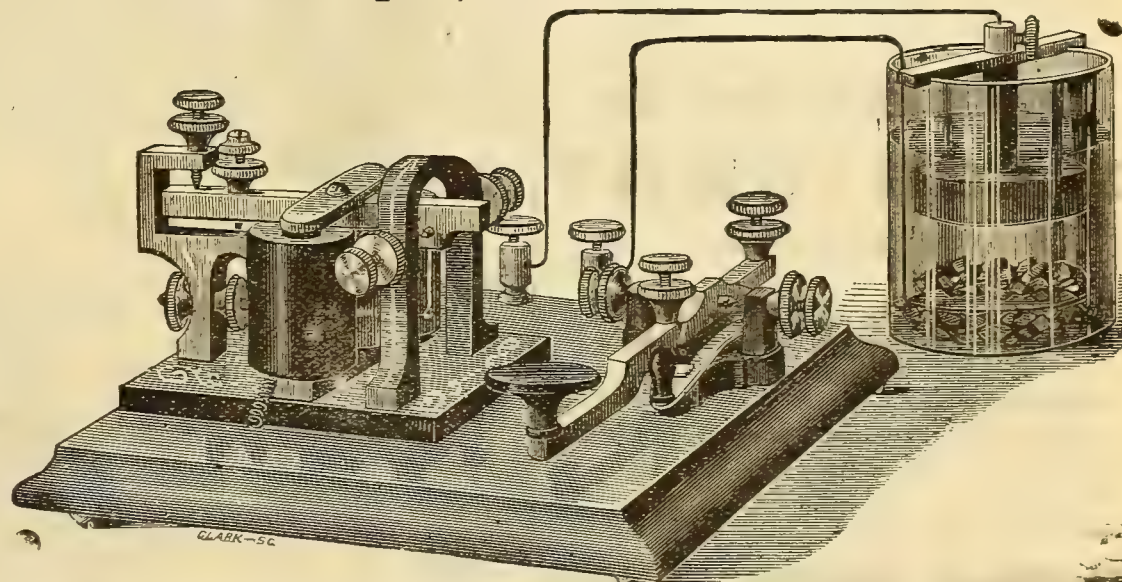
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Guaranteed the best and cheapest in the world. Price by mail, \$1.25.

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Not the Cheapest, but Guaranteed the Best!



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These instruments are the exact size and form of those upon which we received the highest award at the late Centennial Exhibition over all competitors. Everything reliable, and so guaranteed, or money refunded. Our Book of Instruction contains full and explicit information as to setting up the Battery, running of wires, etc.

Price, Complete Outfit.....	Money in advance, \$5 00
" Instrument without Battery.....	" " 4 20
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All orders will receive our prompt and careful attention. To prevent delay in shipment, full shipping instructions with town, county, and State, should be given. Remittances should be made by P. O. money order, registered letter, draft or express, which will insure safe delivery. No goods sent C. O. D.

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STEADY WORK AND GOOD PAY.

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NO RENT WILL BE CHARGED FOR CALL BOXES.  
The patronage of the public is respectfully solicited.**H. W. POPE,**

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**COMPLETE SETS OF**  
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Wire Stranding Machines.

Complete sets of Machinery for Purifying India Rubber  
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**SWITCH BOARD**  
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**ST. LOUIS.****SHORTHAND.**  
**TAKICRAPHY,**

The Standard System,

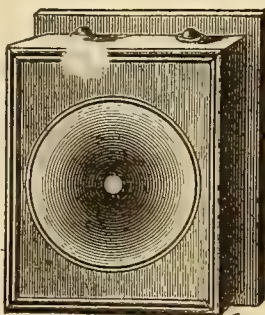
successfully taught by mail. A Complete System in a "nut-  
shell." Send five cents and stamp for copy.**E. W. FARNHAM,**

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They transmit conversation,  
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Price, \$10 per set. See OPER-  
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**FRENCH BATTERY**  
RELIEVES  
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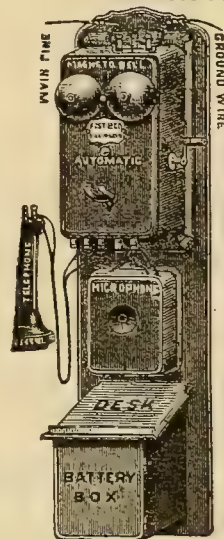
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Manufacturers of all kinds of Tele-  
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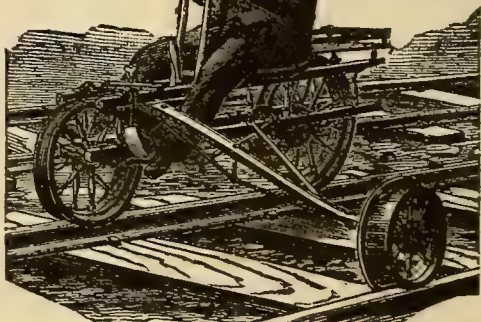
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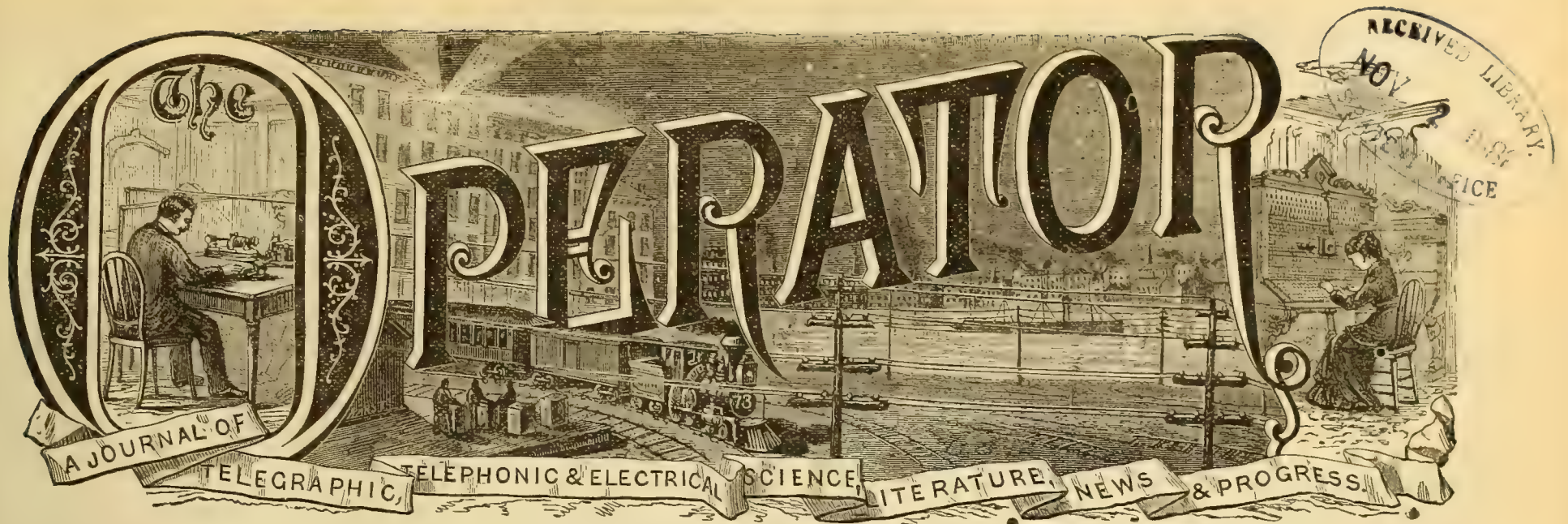
**PURE ELECTRIC WIRE.**

MANUFACTURED BY THE

**Ansonia Brass and Copper Co.,**for Magnets, Telegraphs, Telephones, etc., Insulated on  
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Insulation, covered with cotton or silk.All sizes of **BARE AND COVERED WIRE** in  
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DENNIS DOREN,

General Superintendent of Construction of the Western Union Telegraph Co., and President of the American Cable Co.



## Dennis Doren.

When Denis Doren put on his spurs (metaphorically) to climb the ladder of fame, in Wooster, Ohio, in 1850, he was but 18 years of age. At that time, even General Eckert (who had just abandoned his post-office for an ascent in the same direction) little dreamed that the encouragement he was giving this warm-hearted, muscular, ubiquitous workman would create a Marshal Ney for all his future Napoleonic telegraphic crusades.

The laudable ambition of young Doren, however, was not for prominence or position, but an earnest desire to obey promptly and satisfactorily the orders of his superior officers; a service which inevitably, and often unexpectedly, not only carries success with it, but also elevates the faithful subordinate. When Doren plunged through almost bottomless Western roads, hauled supplies over hundreds of miles of "corduroy" roads, swam unbridged rivers, and risked his life daily in his efforts to execute orders given him by his employers, in their mighty efforts to flank the O'Reilly lines in their Westward Ho! movement, he little realized the bright future that awaited him; and, in this respect especially, his example should stimulate every foreman, repairman, or construction hand in the telegraph service to-day, to renewed efforts in the honest and conscientious performance of their duty; to qualify themselves for their work by close application to it; to compare ideas and experiences with their fellow workmen, and ever to make themselves indispensable by loyal and expert labor.

Young Doren was from the first noted for his genial ways and unstudied affability, and these qualities aided him greatly as he shouldered his ladder ("spurs" were not then invented) and followed the fortunes of "the Wade lines" from 1850 until they formed the nucleus of the present Western Union Company. Doren's politeness and natural gentlemanliness, quick wit, ready repartee, a plastic memory for a good story, and a ready tongue to improve it in repetition, were his stock in trade, and have not only carried him through all the great telegraphic epochs of this country, making him a conspicuous part and parcel of it all, but find him to-day the most prominent; and certainly the ablest telegraphic engineer on this continent, with a greater number of devoted friends, and a wider circle of acquaintances in his own department than is possessed by any other living man.

In a late trip over the Blue Ridge, the writer, while discussing telegraphic matters with the hotel proprietor and the repairmen of those sections, at a remote inn on the mountains, was interrupted by the landlady, who came into the room exclaiming: "Pop! what was the name of that telegraph man that used to go through here and whom we all liked so well?" The old gentleman replied: "Why, Doren, of course!"—which is a fair illustration of Mr. Doren's personal popularity everywhere—a trait which, if not natural with telegraph or other public men, can well be cultivated, not only for the pleasure it is sure to bring the possessor, but for the service it will be to him and to the company he represents. Which of us cannot particularize some lineman, who, with this faculty, can secure the privilege of trimming treasured trees, acquire pole privileges, railroad facilities, livery service, hotel accommodations for his men, etc., where others fail? A man may leave such a reputation as the only legacy for his family without fear of their being disinherited.

Mr. Doren's earliest work, as has been indicated, was on the Wade lines, in Ohio, in their rapid expansion to all the leading Western cities. His efficiency was soon demonstrated, and he was no less active in constructing the new made lines than in taking down the old O'Reilly ones, when their requiem had been sung. Mr. Doren erected the first line on the best of Indiana railroads, the Indianapolis & Terre Haute Rail-

road, for President Peck, early in the '50s. He was also the pioneer in building the Lawrenceburg line, from Cincinnati to Indianapolis, receiving his first intimation that municipal authority must be recognized, by the City Councils of Indianapolis refusing permission to erect some beautifully shaved pinnacle-pinned poles that Doren had culled out and saved for a graceful termination to his second railroad line. The city authorities, however, compelled him to erect square or octagon poles. Doren bowed to the inevitable, and, by running an Ohio River saw-mill night and day, soon completed his work with octagon pine poles. The labor of changing the lines to railroads from the unfathomable roads in those States' fertile soil must have gladdened our youthful constructor's heart as his persuasive voice and commanding manner found new fields for conquest in the hearts of railroad officials, instead of stage-drivers, country landlords and the good old honest tillers of the soil.

Mr. Doren constructed the first line on the Ohio & Mississippi Railroad—Cincinnati to Seymour—little dreaming that the cross-tie walking of those days would so ably aid him when, in later years, in the A. and P. service, he should, without warning, precipitate 200 practical telegraph men upon the same road, in one of the boldest strokes ever attempted by an opposition telegraph company. His pioneer work then rapidly covered the railroads in Kentucky between Lexington and Frankfort—Kentucky Central, Lexington & Covington, Central Ohio, Bellaire to Columbus, and Ohio & Indiana (now the Pan Handle), and Steubenville to Newark.

When the war broke out in 1861 and Doren's brilliant chief was called to Washington, as a natural consequence Doren followed his fortunes, and to this hour has given Gen. Eckert most faithful and loyal co-operation in every telegraph step he has taken. The difficulties encountered in the erection of military telegraph lines no constructor of the present day can even imagine; and Doren's early experience in Hoosier mud roads was of great assistance in the adhesive clay of old Virginia. Here, with balky mules and stubborn drivers, express train time was expected. Careless artillery drivers willing to knock down all the poles that the mule corral failed to pull over; slow-marching soldiers compelling the construction corps to take their line in their hands and push the work beyond picket posts; mud, night and death appalling no one, were facts that were not calculated to make the service especially inviting, and yet, with such intrepid assistants as McBristal, Owen Boyle, Joseph Finnegan, Palmer Gulick and Harreycutte, he soon placed brigade, division and department in immediate and constant communication with the War Department.

While the important but inconspicuous part borne by Mr. Doren in the struggle may never be properly appreciated by the nation, it developed the man and united him to the telegraphic geniuses of this country, whose impress will be left upon the great commercial lever generations hence.

Mr. Doren's most notable escape during the war was at Cold Harbor, Va., with General Grant's army. The enemy had located General Meade's headquarters, and made it so uncomfortable that it was dropped further away and behind a protecting hill. During the change, however, the headquarter's telegraph line went down, and Doren, with his usual spirit of self-abnegation, instead of ordering some subordinate to take the risk, started out to repair the break. The Confederates sighted the big lantern upon his arm, and blazed away. Just after connection was restored, a minie-ball struck Charlie, his horse, and off he went at break-neck pace, almost into the Southern lines before he could be checked. Doren then got off and groped his way back through line after line of sentinels until, about daylight, he found his camp.

While laying the first cable—15 miles long—from Cherrystone, Md., to Fortress Monroe, in 1872, the new steamer *Hoboken* went down in a gale, causing the cable to be lost, and the crew and telegraph men to endure much privation before they were rescued by the *J. R. Spaulding*, and returned to Fortress Monroe. Doren was soon furnished another cable, and the day he started to lay it the iron-clad *Merrimac* made its devastating call in Hampton Roads. The cable was "rushed," however, and the next night

W. J. Dealy and Geo. Sheldon sent the joyful news over it that the *Monitor* had arrived and changed the history of this nation.

Later in the war Doren also laid a cable in the James River, from Fortress Monroe to City Point, 40 miles, to avoid the annoying interruptions the confederates were giving the land line. This was done at night, but the argus-eyed Southerners detected it, and in a few days Doren was ordered after a *ground* in the cable. After undermining and careful cutting he was able to get the proper section on deck and located the trouble. The cable had been taken up and a large awl forced through it, making a nice little aperture for the water to work its mischief. The cable was not further molested as the conflict deepened, and the Southern troops were driven further away.

After the war closed, Mr. Doren built new lines for the American Co. on the various railroads from Richmond to Gordonsville, Alexandria, Washington, Danville, Wilmington, etc., until Gen. Eckert was appointed General Superintendent of the Western Union Eastern Division, when Doren followed him to New York, and remained there, as Superintendent of Construction, until the General accepted the presidency of the Atlantic & Pacific Co. in 1875.

In this service Doren's old war experience was of great avail. No emergency ever arose that did not meet its master in him—whether in secretly gathering an army of telegraph men into Cincinnati without attracting attention, or even causing his men to be surprised; and unexpectedly hurling them out along the Ohio & Mississippi Road and almost covering it with a telegraph system before his opponents were aware of it, or whether in building 1,200 miles of line with two wires in 92 days, through most terrible rains, swamps and mud, from Louisville to New Orleans, Doren's push and contagious enthusiasm were ever omnipresent. The slow-going farmers through that section of the country will never forget "the lightning man" who could not wait until "next week" for their teams, but *must* have them "right now."

When the A. & P. faded like a myth, to give place to the wide-awake American Union organization, with its brave and dashing leaders, it was the most natural thing in the world to expect Doren's "white plume" to be shining in the front rank. The prodigious labor, mental and physical, performed by him in those active and trying days, and the magnificent lines he has left behind him, entitle him to the highest encomiums and perpetual rest. The latter, however, he will doubtless never take until his labors on earth are all ended. During his four years of military service he could only be persuaded to accept two weeks' leave of absence, while, in later years, he has forgotten what leisure is.

While crowding the magnificent new line on the P., F. W. & C. R. R., last winter, having rushed it through from Chicago with five hundred men with unparalleled speed, in the severest winter weather ever known here, the following dispatch was received and read to each gang, as they enjoyed their turkey dinner next day:

NEW YORK, Dec. 24, 1880.

To Mr. D. Doren, Gen. Supt. Construction, Mansfield, O.:

Say to the men that Mr. Gould, Mr. Bates, myself and all interested are grateful for their work and wish them all "A Merry Christmas." To yourself we send our hearty congratulations and good wishes.

THOS. T. ECKERT, Prest.

Mr. Doren was also the recipient of a superb gold watch, beautifully monogrammed "D. D." on the face, and the "battle shield" with the cabalistic A. U. T. on the reverse side, while on the inner cap was engraved:

"557 FIFTH AVE., N. Y., Dec. 25, '80.

Mr. D. Doren, Gen. Supt. Construction, Amn. Union Tel. Co.:

May I ask you to accept the accompanying watch, chain and seal, as a mark of my appreciation of your ability and integrity.

JAY GOULD.

The sardonyx seal bore the monogram "D. D." on one side, and *Puck* "girdling the earth" on the reverse.

Thus in an additional and certainly very pleasant manner, Mr. Doren realized that his travels of over 600,000 miles in the telegraphic service of this country were appreciated, and that "patience is bitter, but its fruit is sweet."



### The Telephone Inspector.

In the October 15th issue of THE OPERATOR appeared an advertisement bearing in large letters the unusual legend, "Inspectors Wanted." The company requiring the inspectors was the Bell Telephone Company of Missouri, St. Louis. The advertisement is a sign of the times, and furnishes a text for this article.

There are inspectors and inspectors; there are men who to a telephone or local telegraph company are worth any price—are worth their weight in gold, to speak hyperbolically, while there are others who are not worth their weight in "etheric force" or individual bells. A really good, able and industrious inspector can, even under very adverse circumstances, often get good work out of a bad system and worse instruments, and can keep subscribers at least passive.

But, on the contrary, a lazy, inefficient or, worse than all, a *careless* inspector can blight the fairest and most promising route of subscribers; can ruin the best instruments, without giving a week's notice, and can make the lives of the office manager and of all of his subscribers so ineffably miserable that, emulating the Brooklyn divine, they see no deliverance in this present world, and "even wish that they were dead."

If any remarks in this article should grate upon the feelings of such a one, let him congratulate himself, for in that case he is not irrecoverable—there is hope for him if he reforms at once. If similar remarks should, as "a bow drawn at a venture," hit any inspector who occasionally makes a mistake, but who, in the integrity of his heart, tries to do as well as he knows how and always is anxious to learn more, let him not feel hurt thereby; from such a one criticisms glance off pretty much as water does from the plumage of the swan.

Before the mind's eye of the writer passes a typical inspector of the "not thorough" class. Although meaning well all the time he rarely does well. He is called upon to attend to a complaint. This document is, of course, as lucid as the densest mud, probably couched in the impassioned words, "The d—d thing won't work." Our hero goes off whistling, with a heart as light as hydrogen, and presently arrives at his destination. He at once wins the heart of the subscriber with his cheery smile, especially if he hasn't been there before. After a pleasant word for every clerk in the store and a genial smile for the lady cashier, he takes the offending instrument in hand. He finds the bell box to be one with the attachment recently invented by Edison, Johnson, Anders, Gray and a horde of other professional inventors, whereby the old button for cutting in the generator to the line is rendered unnecessary. In other words, a bell box with "automatic shunt breaker." On testing it he finds that he can't raise the central office. Fully competent, he makes up his mind that as all seems to work properly the difficulty is, of course, that the shunt does not break. To get at the trouble he has to open the box, and discovers that he has left his bunch of keys in the keyhole of his drawer at the office. Misfortune the first. It will be remembered that this man is smart and able; his only trouble is thoughtlessness and lack of thoroughness. Therefore *because* he is smart, an idea flashes across his mind. He takes out his screw-driver, rapidly unscrews the line and ground wires, and the transmitter battery, and tries, by connecting one pole of the battery to the ground, and tapping on the other with the line wire, to drop the annunciator at the central office and attract the attention of the manager. Fortune favors the brave; the line is well insulated, the annunciator magnet well wound with fine wire, and the battery at its best, so he succeeds.

He gets the manager to send the keys down by a boy, and after the boy has come and gone and he has opened the box and detected the trouble, he wants his pliers. He hunts for them in every pocket, and at last remembers that he didn't have any occasion to use them for two days; thought he wouldn't to-day, and so, as they were a weight to carry about, he put them in his tool drawer early in the morning.

Ashamed to call again to the office, he, for want of the required tool, repairs the bell imperfectly, resolving to visit it again soon and then fix it properly. He then connects up the wires again, tests with the office, finds it works well,

and goes off, forgetting to re-cover the battery box, but not forgetting to fresco the carpet with ammoniacal salts and oxychlorides of zinc, which, while waiting for the boy, he had carefully peeled from the jar. He, of course, also forgets to go near that subscriber's office again to permanently repair the trouble, and in three days the same old difficulty is reported again. The subscriber, however, isn't so glad to see him this time, and, if another man be sent, he has to suffer for the fault of No. 1. But he goes on his way rejoicing, and is now on his regular beat. At one place he examines and tests bell, transmitter and telephone, but doesn't look at the battery. If he had, he would have found the solution low and the zinc eaten off and scarcely touching, and saved a complaint.

If he had done this, and had a zinc in his pocket—but this is opening too wide a field for conjecture, and we forbear. At the next place he fails to try the binding screws, and in a day or two a loose connection is reported on that line. At number four he remembers that Mr. Surly is not always pleasant, and he concludes that one miss won't matter. Ten to one it is all right, anyway. At number five he makes a thorough inspection and finds all apparently in good order, but he doesn't try the instrument to see if the talking is all right. If he did, he would soon find that Mr. B. hadn't paid his gas bill, and that his meter had that day been taken away, and so on *ad libitum* to the bitter end. This man never carries a full kit of tools. He trusts to luck that he won't want them. He never carries sal ammoniac or extra zincs. He always leaves something undone, and he wonders why Jack Earnest and Sam Careful always get ahead of him, when he is so many degrees smarter than they. Don't we know such men? It is well to emulate his smartness and shrewdness; but if you can only possess one good quality, let it be *thoroughness*.

We have seen the lazy inspector. It is not necessary to name him. He won't go out after four. He always takes a car, even if his destination is but half a block away. He makes it a rule never to do too much. "The company is rich, you know." His motto is, "Never do to-day what you can put off till to-morrow," and he acts well up to it.

He has a system. If he has a regular inspection route, he will have a little lottery with himself every day and draw cuts to see which house he shall *not* visit. He knows where all the free lunch counters are, and doesn't forget it. The telephones are always in good order at the saloons on his route, and he can always be found, because every boy in the office knows where he will be at every hour in the day.

There are, however, certain times when he has a rush of business to the head. These occasions are chiefly when an inspector is required to locate a line trouble, and there is only one besides himself in the office.

He need scarcely trouble to be busy at these times, however, since the manager probably knows that if he goes out on a line trouble, a snail's gallop would be two-forty time compared with his, and the other man will invariably be chosen.

We know another inspector who is as smart as our first specimen; who can do anything in the world with wires; who invented a button repeater before he cut his eye teeth; who can make a diagram quicker than Gerritt Smith can think of one; who is lightning on locating breaks, grounds and escapes; who knows every time, from the way a fault acts, what causes it; who is quick, sharp, careful, and who would be invaluable, provided he would consent to apply his talent for the company which pays him, and to his regular duties. Unfortunately, however, that is the one thing he won't do. If he should, he would be perfection. If he is wanted to go out and attend to a reported trouble, he will be found in the back room making an induction coil. If he starts out to locate a ground, he will have to stop when he passes the switch-board to explain to an aspiring young electrician why an annunciator placed in the common ground wire won't work. If he is wanted to relieve the manager for an hour, he can't be found, and upon anxious inquiry it is elicited that he has just stepped up to Tom Edison's new place, you know, to tell him that he has no chance against Maxim, except by stock-jobbing electricity. He can make wonderful shocking machines. He can make an electrical clock out of a battery-pole

changer. All the boys in the office regard him as the greatest man that ever lived, and the girls unanimously pronounce him "too smart for anything;" and so he is. He is valuable because he knows almost everything. He has a private contract with all of his subscribers, that he will have a regular day to come around; and, if the instrument don't work, not to complain to the office, but to wait and tell him. Of course, there can be nothing tangible against him, as he always covers well his tracks when he meanders from the paths of professional rectitude. He is handy, but there is a general impression that he is not reliable; and a standing joke goes round occasionally, when the manager wants the room where old apparatus and instruments are kept cleaned up, that all there is to do is to send Ed. Coilmaker into the room for a day or two, and it won't need any more cleaning.

We know another man who ought to quit the business. Although well-meaning and pleasant, he is simply the wrong man in the wrong place. He used to be a telegraph operator. He can handle a key with celerity, and, if necessary, can to-day copy twenty words behind; but he is not an inspector. Inspectors are born, not made.

If you send him out to detect and report upon the nature of a trouble, he will report an escape, when the trouble is a broken wire, and *vice versa*. He will have his superintendent put a steady battery on to aid him in locating an escape. He will rip out a transmitter, because the battery is dry, and report a weak magneto generator, when the trouble is a bind in the drop at the central office.

If he goes on the roof or into the cupola to change a pair of wires, he will probably connect one to the lightning arrester ground and the other to your most important extra territorial line.

He always connects the battery wires to the secondary coil of the transmitter, and includes the telephone in the primary. If he gets anything accidentally right, he is astonished, and so is everybody else. He has one excellent feature, however, namely, his unfailing good nature. He is not to blame, only he had better go back to the key, study law, or apprentice himself, while the lamp holds out to burn, to a tailor.

But while patiently considering these various typical inspectors, there is one who at length steps forward, modest and unassuming. He is one that the experienced manager delights to honor, and that honor takes the shape usually of extra and difficult work. If an inspector acknowledges himself beaten, John Springjack has to show him. If successive inspectors and linemen fail to find a swinging break or escape, John is called upon to do it, and does it.

When he goes on a complaint he looks over his tools first. If he has to work on carpets, he carefully spreads a newspaper on the floor. If he has to fix a battery, he will carry it into the kitchen. He will not leave a job till he knows it is done and done well; and when John pronounces it done, everybody knows it is done. He always examines and tests every part of the apparatus, and tests it thoroughly. He is wise in his day and generation, and when anything is working well he knows enough to let it alone. He tries every binding screw. He studies cause and effect. He doesn't have to learn a thing twice. If he makes a mistake, he thereby learns a lesson. If he is on a trouble, he won't leave it because it is 5 o'clock. He knows just as much about induction coils as the next man, but they doesn't trouble him in business hours, except when they are inside of a transmitter. When he walks the street he keeps one eye on the wires, and doesn't fail to report any defect he sees; and it doesn't take him a month of Good Fridays to get acquainted with the lines of his own employers.

A subscriber who has once seen him wants to see him again, and the linemen, who secretly hold inspectors in contempt, always like to be on a job with John.

He doesn't report a cross until he knows it is one. He doesn't report line open until he has tried the receiving telephone to speak with, and before rejecting a transmitter he will examine the battery and bell connections. In a word, he is thorough, and to all inspectors we say, *be thorough*, whatever else you may not be. A word to the wise is sufficient. It is probably the last class of inspector that the St. Louis company wants.

T. D. Lockwood.



## A MAGNIFICENT WORK.

POEMS OF WILLIAM WORDSWORTH. Edited, with an Introduction, by Richard Henry Stoddard. Elaborately illustrated. 320 pages. Cloth; gilt edges. New York: W. J. Johnston, No. 9 Murray street, 1881.

The increasing love of, and taste for, good literature, which has been manifested in the ranks of American telegraphers for some years past, has induced the publisher to supplement his previous works by a superb edition of a volume of Wordsworth's poetry. The sale of



"Christmas Evergreens," a fine collection of poetry, verified the apt saying that, among American telegraphers at least, Poetry may flourish beside Science—indeed that the two may go hand in hand. The tired slave of the key and pen goes home at night to rest his weary faculties, distracted with the cries of "bull" and "bear," the market prices and the everyday grind of a telegrapher's life, and what more solace can he find, next to that of his loving family, than a volume of good poetry? And of this latter what is there more tranquillizing to the mind, or soothing to the nerves, than to go with the Laureate through the grand old English lake region—one of the richest in antiquity in England—to stop, as it were, and converse with the simple-minded peasantry, to linger in the enchanting solitude of Grasmere, to view the "scarred summits of the hills, lulled by the four gentle rivulets which sing their way down past the yews to the full stream below, and to watch the butterflies, the creeping things, the luminous wild flowers, all joyful in the sunshine?" The humming and tired brain, the swimming eyes, the throbbing pulse, quickened by exacting and continuous labor throughout the day, find welcome rest at evening in the study and contemplation of Nature, as pictured by the Master, Wordsworth. The tired worker, laying down for an hour his load of responsibility and care, may, with the Laureate, in his "Evening Walk,"

"Rove  
Through bare, gray dell, high wood, and pastoral  
cove."

"Where hoary Derwent takes,  
Through crags and forest glooms and opening lakes,  
Staying his silent waves, to hear the roar  
That stuns the tremulous cliffs of high Lodore;  
Where peace to Grasmere's lonely island leads,  
To willowy hedge-rows, and to emerald meads;

Leads to her bridge, rude church, and cottage  
grounds,  
Her rocky sheepwalks, and her woodland bounds;  
Where, bosomed deep, the shy Winader peeps  
'Mid clustering isles, and holly sprinkled steepes;  
Where twilight glens endear my Esthwaite's shore,  
And memory of departed pleasures, more."

No matter how the critics may disagree with regard to the merits of Wordsworth, all are of one mind as to the fact that as surely as Columbus discovered America, Wordsworth discovered Nature, annexed her to Literature, and then proceeded to surpass Columbus' exploit altogether by inventing a new language in which to talk about the new conquest. In this, then, we believe that the publisher has made no mistake in presenting to the profession the present volume so ably edited.

The cut at the head of this article will give the reader an idea of the neat and attractive appearance of the book. It is elegantly bound in cloth, with a profusion of gold on the side and back and gilt edges, the present edition being intended principally for the holiday trade. It contains seventy-four superb engravings—all large, most of them being about full-page—some of which we present below, though, of course, they are much more handsome in the book, being very carefully printed on heavy tinted paper. Here, for instance, is a scene from the charming "Evening Walk:"

To him who has for years seen nothing but the bricks and mortar of a large city, and heard nothing but the hum and bustle of metropolitan life, how welcome must be the thought of

wandering fancy free in a "Saunter Through a Wood:"

"How sweet it is, when mother Fancy rocks  
The wayward brain, to saunter through a wood!  
An old place, full of many a lovely brood,  
Tall trees, green arbors, and ground flowers in flocks.  
\* \* \* \* \* Verily I think,  
Such place to me is sometimes like a dream  
Or map of the whole world; thoughts, link by link,  
Enter through ears and eyesight, with such gleam  
Of all things, that at last in fear I shrink,  
And leap at once from the delicious stream."

Who is there, weary of his load of toil and sorrow, that has not been captivated by Wordsworth's "Wishing-gate"—that gate in the vale of Grasmere, by the side of the highway leading to Ambleside, which, time out of mind, has been called the Wishing-gate, from a belief that wishes formed or indulged there have a favorable issue?

"Smile if thou wilt, but not in scorn,  
If some, by ceaseless pains outworn,  
Here crave an easier lot;  
If some have thirsted to renew  
A broken vow, or bind a true,  
With firmer, holier knot.

"And not in vain, when thoughts are cast,  
Upon the irrevocable past,  
Some penitent sincere  
May for a worthier future sigh,  
While trickles from his downcast eye  
No unavailing tear.

"The worlding, pining to be freed  
From turmoil, who would turn or speed  
The current of his fate,  
Might stop before this favorite scene,  
At Nature's call, nor blush to lean  
Upon the Wishing-gate."



"When, in the south, the wan moon, brooding still,  
Breathed a pale steam around the glaring hill,  
And shades of deep-embattled clouds were seen,  
Spotting the northern cliffs with lights between;  
Gazing the tempting shades to them denied,  
When stood the shortened herds amid the tide."



To the lover of rustic scenes there must be rapture in the living picture of inanimate nature, which will be found at the bottom of this page.

The editor has, with rare tact, performed a work which should add still more to his great reputation. There are about ninety poems included in the book, among them such exquisite pieces as "We are Seven," "To the Cuckoo," and "She Dwelt Among the Untrodden Ways." Nor does his theme stop with the shore. There are some splendid illustrations of maritime life, one of which we give on this page.

Matthew Arnold, speaking of the poetical performances of Wordsworth, very truly says that, after that of Shakespeare and Milton, of which all the world now recognizes the worth, they are undoubtedly the most considerable in our language from the Elizabethan age to the present time. Taking the roll of our chief poetical names, besides Shakspeare and Milton, adds Mr. Arnold, from the age of Elizabeth downward, and going through it—Spenser, Dryden, Pope, Gray, Goldsmith, Cowper, Burns, Coleridge, Campbell, Moore, Byron, Shelley, Keats (I mention those only who are dead)—I think it certain that Wordsworth's name deserves to stand, and will finally stand, above them all.

But this is not enough to say. I think it cer-



"This sea that bares her bosom to the moon!"



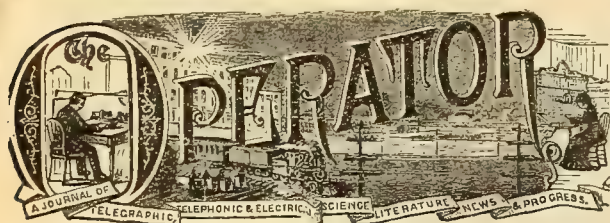
"——— I saw the sparkling foam,  
And—with my cheek on one of those green stones  
That, fleeced with moss, beneath the shady trees,  
Lay round me, scattered like a flock of sheep—  
I heard the murmur and the murmuring sound,  
In that sweet mood when pleasure loves to pay  
Tribute to ease; and, of its joy secure,  
The heart luxuriates with indifferent things."

tain, further, that if we take the chief poetical names of the Continent since the death of Molière, and, omitting Goethe, confront the remaining names with that of Wordsworth, the result is the same. Wordsworth has left behind him a body of poetical work which wears, and will wear, better, on the whole, than the performance of any one of these personages, so far more brilliant and celebrated, most of them, than the homely poet of Rydal. Wordsworth's performance in poetry is, on the whole, in power, in interest, in the qualities which give enduring freshness, superior to theirs. Wordsworth's poetry is great because of the extraordinary power with which he feels the joy offered to us in nature, the joy offered to us in the simple elementary affections and duties; and because of extraordinary power with which, in case after case, he shows us this joy, and renders it so as to make us share it.

The gentle Wordsworth takes us, as a true Nature-worshipper, to the floating island in Derwentwater, which appears and disappears periodically on the water, varying at different times from an acre to a few perches in extent; to the Haunted House of Armboth Fells, where wide-eyed peasants see a large dog swimming Thirlmere, welcomed by moving lights and ringing bells, and hear preparations made for a murdered bride, who still keeps there her ghostly nuptials; to the glen where is the scene of the somnambulist tragedy in which Sir Eglamore returns from afar only in time to find his disconsolate Emma perishing in this torrent; and even to the old seat beside the hazel tree in the garden at Dove Cottage, where he used to compose his poems.

It has been well said of Wordsworth that, in his human sympathy and benevolence, "it was his hope and aim to console, to bless, to uplift and to encourage hearts and minds;" and we believe that in placing this volume before our professional brethren the act will be fully appreciated, and that the sentiment will not be lost which places Poetry by the side of Science.





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W. J. JOHNSTON, Editor and Publisher.

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Subscribers desiring their addresses changed, should give the old as well as the new address.

### THE OPERATOR

has now reached the highest place ever attained by any telegraphic paper, and it is considered only proper that it should celebrate the event by issuing a number which has never been equalled by any similar class journal, and which will probably never be eclipsed. It contains 36 pages.

A sample copy of the present issue is mailed free to every telegraph and telephone exchange in the United States and Canada, as far as we have been able to reach them. Our object in sending it is that non-subscribers may see what **THE OPERATOR** is like, and that we may secure their aid and co-operation in our efforts toward giving the fraternity a strictly first-class, independent paper, of which they may justly feel proud. We would ask every non-subscriber into whose hands a copy of this issue may fall to **PROMPTLY** send in his or her subscription, and also make an effort to get the subscriptions of at least one or two others to forward at the same time. The recent unprecedented increase in our subscription list has been met on our part by an immediate and even more than corresponding improvement in the paper, and it is hardly necessary to add that we shall conscientiously continue the same policy in the future.

We will mail **THE OPERATOR** to any address from the present time until **JANUARY 1, 1883**, postage prepaid, and address changed as often as desired, for **ONE DOLLAR**. Send in your subscription now, while you think of it. See advertisement of **THE OPERATOR** and of our books in another part of this paper; also low rates at which the paper and one or more of the books may be ordered together.

A subscription form will be found inclosed in each copy of this issue. Those wishing to order books as well as the paper can write the names of the ones they desire in the blank space between the order for **THE OPERATOR** and their own signature.

As there are in some places operators (at railroad and branch offices) who will not receive copies of this issue—which are only sent to the Western Union or other head office of each town

or city—the manager who receives a copy will confer a great favor by showing it (after he has read it and sent us his subscription) to all the operators in his own office, drawing their personal attention to the paper; and then sending the copy (after they have thoroughly examined it) to any other operators or others interested in the business there may be in his town or city. By collecting and forwarding their subscriptions, he may be able to get his own paper or some of our books free, and will, at the same time, render us a valuable service which we shall be glad to reciprocate. If all will do this (and it will not be much trouble individually) the present issue will completely cover the entire telegraph and telephone fields, and the increased number of subscribers will enable us to still further enlarge and improve the paper. Let every manager enter heartily into the spirit of this suggestion and do his share toward making **THE OPERATOR**—if it is not so already—by all odds the best professional or class journal in America. After sending away your own copy, if you want another of this issue to keep let us know, by postal card or when you send in your subscription, and it will be at once mailed you.

Present subscribers, who may receive more than one copy of this issue will please use it or them in getting us as many new subscriptions as they can. Now is the time to “strike while the iron is hot.” As a copy of this issue goes to every office, there ought to be no trouble in securing subscriptions. We would particularly ask our friends to send their copies of this issue, after reading them, to such operators in their towns or cities as may be in branch or railroad offices and would not be likely to see a copy addressed to the manager of the Western Union office. We will supply extra copies to those saving the numbers who may send theirs away in this manner. Extra copies will also be mailed free for use as samples in getting up clubs, or to supply any offices which we may have been unable to reach.

### DENNIS DOREN.

We publish to-day, with great pleasure, the story of the long life of alternations of triumph and defeat—mostly triumph—of Mr. Dennis Doren.

Mr. Doren's career, besides being extremely creditable to himself, is also a credit to General Eckert, as may be seen by a perusal of our interesting narrative. The General, who seems to possess in an eminent degree all of Beaconsfield's and Palmerston's strange secret of selecting clever young men from the vast crowd around them, and of never allowing a promising young recruit to go into the camp of the enemy, has particularly vindicated this foresight in the life of Dennis Doren.

It has been well said that all great men are good natured, and of this theory Mr. Doren is a conspicuous example. With him nothing has been permitted to lie fallow, and his heart has always been in his work, to which to-day some of the staunchest lines in the country bear testimony.

He stands now as one of the great leaders of the telegraph against whom the first breath of suspicion has never yet blown, and the story of his telegraphic life may awaken in many the most grateful recollections of the kindness, courtesy and energy of Dennis Doren.

### WHO IS TO THROW THE FIRST STONE?

It has been said of the Telegraph that it was to be the great promoter of Peace on Earth, but, if the future historian must judge by this number of **THE OPERATOR**—a journal which, as everyone understands, has from its foundation pursued the rather uncourtly plan of caring for nothing but Right and Truth—the Telegraph will appear to him as essentially the great promoter of Discord. This is, however, acknowledged to be the great age of publicity, and as publicity is one of the first principles in the efficient administration of a great telegraph company, the painful duty devolves upon the conscientious telegraphic journal of holding up real and alleged abuses to public inspection, and of invoking public opinion upon them, rather than that of expressing our own opinions.

The grave charges of corruption, lying and theft made by the officers of the Mutual Union against certain officers of the Western Union—which are reported in another column as fully as our space will allow—are either true or not true, and the members of our profession at large, with their usual detestation of wrongdoing, may judge for themselves. But, true or not true, one side or the other—since both cannot be right—is convicted at once of being totally corrupt and utterly devoid of both common sense and common decency; and the principle is fully established that all the virtue, all the keenness of perception and all the impulses of honor are not confined to the so-called higher ranks of our profession.

In judging of the merits of this question, the operators of both companies should remember that the interests of subordinate and chief are forever identical—they must succeed or fail together—and that there is certainly no room for the officers of one company to point with Pharisæic pride to the short comings of the other set. We should make due allowance for the necessities of the situation, and respect all the official rules, traditions and other environments under which these men have been acting. If then they have acted within these bounds, calumny, which is but the breath of the wind—and all public men may expect it—can never hurt them. It must fall from the armor of their honesty like water from the back of a duck. Let their characters be thoroughly understood.

We have always regarded Gen. Eckert, with his stately presence, the natural courtliness of his manner and his personal dignity, as the incarnation of candor, honor and chivalry—strong and sturdy as an oak in his dislikes, and liking nothing that is bad; ever found with a generous heart and a full hand; built in body and mind to last, and lasting to work and triumph, and possessing to the full qualities which would bring him to the front in any profession. It is hard to bring ourselves to believe, therefore, that this strong, manly man, who for twenty years has wielded supreme power among his fellows, leading always by the sole right of intellectual power, has compromised himself in a petty, everyday “job;” that all this great strength of will, this extensive knowledge of the world and this great and cherished reputation have been pros-



trated before a private detective. We are reminded that the General has made no direct reply to the charge; but we prefer to believe that, whatever his reason may be for comparative silence, that strong physique of thew and sinew and of brain denotes too much courage to permit him to shrink for a moment from a responsibility of this kind, "even though it blast him."

Mr. D. H. Bates, fair and flowery, and pure—that is, the purity of the unsophisticated, who has never before been tried in the alembic of temptation—should withstand the fierce light that beats upon a throne equally as well as General Eckert. His doe-like yet (paradoxical as it may seem) conquering nature; his memory like an encyclopædia, and his rare intellectual gifts surely never yet led him so low as to "deal" with irresponsible clerks. Far excelling in worldly success all his contemporaries in age, his career has no parallel in telegraphic history. We believe him to be an amiable gentleman who by his fidelity and sheer pluck has surmounted all difficulties and worked his way upward, step by step, from an obscure railroad station, at Altoona, Penn., to one of the highest telegraphic positions in the land, being now barely thirty-eight years of age, and having been a superintendent of one of the largest Western Union districts at the age of twenty-four. Having looked with admiration upon his well-won and well-worn honors in the past, we have naturally looked to him for honorable and brave service in the future.

We believe that when the inside history of this unpleasant matter shall be known, it will be found that, as in many other cases, the principals on both sides have been imposed upon by middlemen and professional go-betweens—at least we hope so, for the honor of the telegraph profession.

THE charge made by Secretary Peck that the officers of the Mutual Union now hold \$250 belonging to the Western Union, which sum was paid by the latter company to a clerk of the former company to bribe him to commit petty larceny and breach of trust—in fact to lie and steal—is, to say the least, very embarrassing. We would suggest, as the easiest way out of the dilemma, that they once more bring forward that great George Washington of sunny Italy, Giovanni Purissimo Morosini, as they did in a similar emergency last spring. Let him enter a court of law of his country (if he has yet acknowledged America as his country) and, with uplifted hand, solemnly swear before his Maker that his name is Giovanni, not George; that he is a crony of Jay Gould's; that Jay Gould never possessed \$250; that the Western Union never earned \$250; that no such sum was ever paid; that he never drew any salary, and that this tall swearing is purely voluntary on his part. This would settle the matter, since everyone believes Giovanni. It was the great Mr. Jefferson Brick who exclaimed in great ecstasy: "This is a great country," but even he would admit that, in these matters, Italy takes the cake.

THAT strong Western Union Directory turns a bold front to the forthcoming opposition, and it behooves the latter to work still more persistently and vigorously. The old board represented a controlling interest in the Union Pacific, the Wabash and the whole Southwestern system. Since being strengthened by the addition of C. P. Huntington, President of the Southern Pa-

cific, Central Pacific, Chesapeake & Ohio, and virtual master of about 6,000 miles of road; George B. Roberts, President of the Pennsylvania Railroad and manager of 8,000 miles of railroad; Samuel Sloan, President of the Delaware, Lackawanna & Western and one or two other railroads; Amasa Stone, one of the strongest men in the Lake Shore road, and Chauncey M. Depew, who may stand as Mr. Vanderbilt's representative, it is clear that the twenty-nine men composing this strong directory can dictate the policy of the majority of the railroads of this country.

SHOULD the Postmaster-General, in his forthcoming annual report, recommend, as he is reported to contemplate recommending, the adoption of a Postal Telegraph system in this country, he will find himself about as lonesome as his predecessor was, who made a similar recommendation. The companies will require at least \$160,000,000 for the patents, good-will of the business, lines, instruments and buildings. Beyond the great expense there lies the fundamental American doctrine that to engage in the business of telegraphing is not a legitimate function of a republican government. The people of the United States are quite competent to manage their own business, and their common sense rejects any such absurd job as the attempt to establish a government monopoly of the telegraph, so long, at least, as the present "spoils system" is a recognized factor in our politics.

INDEPENDENTLY of the natural course of law in the case of those men arrested in New Jersey for chopping down poles, we hope that the matter will be fully investigated by the employers of the accused men. This course should be taken both for the protection and thorough vindication of the accused and for the honor of the Western Union Telegraph Company. If the men be proved innocent, their traducers should in turn be pursued with all the rigors of the law; but if any officious, over-zealous and unprincipled blackguard has been taking it into his head to devastate other people's property in that manner, we hope to see General Eckert come down upon him like a land-slide, and that afterward he may be left to the tender mercies of Jersey justice.

WE are pleased to see our esteemed London contemporary, the *Electrician*—which hitherto seemed never so happy as when referring incidentally to our "intensely pictorial" American contemporaries—going into the picture business too. In its issue of Oct. 8, it presents its readers with a very creditable engraving of the late Col. Thomas George Glover, of the Royal Engineers (Bengal). We have found the idea very acceptable to our readers, and the *Electrician* will reap its reward in increased popularity by making its countrymen of our mystic craft better acquainted with each other through the medium of intense "pictorialness."

WITH regard to the subject of increasing the hours of labor for operators, it would be well for telegraph managers to remember that in March, 1871, William Orton, President of the U. S. Telegraph Company; E. S. Sanford, President of the American Company, and J. H. Wade, President of the Western Union Telegraph Company, in response to a letter of the Postmaster General, asserted that "six hours' continuous service (steady telegraphing) is all that a young man is capable of performing and maintaining his health." The average official's idea of an

operator's endurance seem to have been revolutionized since that time.

It must be gratifying to American scientists to learn that at the Electrical Exhibition the Americans carried off a very large number of the prizes, considering the relatively small number of American exhibitors. The distinguished recognition given to the merits of Mr. Thomas A. Edison should be particularly gratifying to him and his countrymen; for, while Mr. Edison has been the subject of much derision—and, in many cases, not unjustly—he has, in this case, by his perseverance and public spirit, fairly earned all that has been awarded to him.

THEY seem to have some "grasping corporations" in France, as well as in America, for, when the announcement was made at the Paris Electrical Exhibition that a Diploma of Honor had, by some unseen and mysterious forces, been awarded to the Paris, Lyons and Mediterranean Railway Company, an organization notorious for its bad management, the interesting news was "greeted by ironical laughter and a perfect storm of indignant protest." No American pole-chopper received even honorable mention.

THIS season of the year is remarkable in our history for great losses of telegraphic property by fire. The 10th inst. will be the anniversary of the big fire in Boston, an occurrence apparently so recent that few of the older operators will realize that nine years have elapsed since then. A year earlier the great fire at Chicago swept away many telegraph offices in that city and some hundreds of miles of wire. One year ago, Oct. 24, 1880, the central telegraph office at Manchester, England, and the whole telegraphic system in that city were destroyed by fire.

THIS issue of THE OPERATOR, consisting of 18,000 copies, requires eighty-two reams of white paper of 500 sheets each, or in all 41,000 sheets of paper, 26x40 inches in size. Forty thousand sheets—to make it round numbers—40 inches long, will reach, in a straight line, 1,600,000 inches—that is, 45,000 yards, or 25½ miles. Double this, as the paper is printed on both sides, and we have, in a straight line, three columns abreast, fifty-one miles of reading matter for the profession, or one printed column 153 miles long.

PEOPLE are expressing surprise at the action of the Gould party in "permitting" President Green and other old Western Union officials to retain office for another year. There may be a key to the mystery in the fact that, although Mr. Vanderbilt is "out" of Western Union, his interests are not likely to be badly "left" while he retains in the directory such able lieutenants and staunch friends as Chauncey M. Depew, Augustus Schell and Edwin D. Worcester.

THE practice of changing Signal Service officers from station to station, for no other reason than the senseless one of preventing them from contracting any local attachments, has wisely been abandoned. There is no reason why "local attachments" should be any more demoralizing to a Signal officer than to a telegraph operator, and the abolition of the costly and altogether useless practice is to be commended.

WE learn from the *Mexican Two Republics* that Gen. Grant's project for a submarine cable from Havana to Progreso will come before the Mexican Congress at the present session; and



will probably meet with ready approval. From Progreso Gen. Grant will run a line overland through Yucatan across the Isthmus of Tehuantepec, and then a cable down the coast by way of Aspinwall to Brazil.

READING the allegations of Secretary Peck against certain officers of the Western Union brings to mind the question which Lord Cochrane asked of Lord Nelson concerning naval tactics, and the latter's reply that he knew very little about the subject; his general idea was that he had to get his ship as close as possible alongside of an enemy's, and that he believed he could not go very far wrong on that tack.

ONE year ago, in speaking of the projected Electrical Exhibition at Paris, we suggested that preparations should be made for a similar exhibition in this city at some subsequent date. The idea has been adopted by our English cousins, and the result will most likely be a successful exhibition of electricity at the Crystal Palace, London, in December next.

MR. EDWIN D. MORGAN, who has just been nominated and confirmed as Secretary of the Treasury of the United States, and has declined that distinguished honor, is a gentleman who has been always intimately connected with the telegraph, and is at present one of the Directors of the Western Union.

WE regret to announce the sudden death of Mr. Charles Howard, the publisher of the *Scientific American*. Although only thirty-one years of age, Mr. Howard had earned a wide reputation for keen perception and general business ability, and was justly counted one of the most promising of the younger men in the journalistic profession.

A MAN was paralyzed by a stroke of lightning at Highwater, Minn. Some local electricians reasoned that if earth would receive electricity from the buried end of a lightning rod, it would in the same manner draw out the charge with which they supposed him to be filled. Therefore they dug a hole and covered him up to the chin. He died, of course, in that position.

FIVE hundred pages of THE OPERATOR, tightly pressed, make one inch in height. This edition of 18,000 copies, 36 pages to each copy, makes 648,000 pages—a pyramid, one placed upon the other, 108 feet in height—higher than many of the church steeples in the city.

OUR gratuitous advertising of the Toledo Telegraph School has not been without fruit. The last number of the *Railroader* jauntily says: "October 1st, on account of a press of other business, Mr. Case withdrew from the Toledo Telegraph School." We congratulate Mr. Case.

THIS edition of THE OPERATOR—40,000 sheets, 26 by 40 inches—laid in a square, side by side, would cover a surface ten miles each way—100 square miles.

IT is now thirty years since, Nov. 13, 1851, the first submarine cable—that between Dover and Calais—was opened to the public.

TO-DAY we issue 18,000 copies of THE OPERATOR, of thirty-six pages each—648,000 pages of printed matter.

THE Gould Atlantic Cable, which really worked only forty-eight hours, is still broken.

## TO THE JUNIATA.

[In reviving old war memories, in our sketch of Mr. Doren, the following poem, by an old war operator, seems to be peculiarly applicable. It was composed by David Strouse, one of the four operators who, including D. H. Bates and Richard O'Brien, formed the nucleus of the U. S. Military Corps. Mr. Strouse's labors were too much for his strength. He returned home to Pennsylvania and died of consumption. A few days before his death, while seated on the bank of the Juniata River, near his home, he composed the following lines]:

### TO THE JUNIATA.

Gentle river, ever flowing,  
Where my early days were passed,  
Like thy waters, I am going,  
Sadly to the sea at last.

To that ocean, dark and dreary,  
Whence no traveler comes again;  
Where the spirit, worn and weary,  
Finds repose from grief and pain.

O'er the world I long have wandered,  
Now a stranger I return;  
Hope and health and manhood squandered,  
Life's last lesson here to learn.

Sadly on thy banks reposing,  
I am waiting for the day,  
Whose calm twilight softly closing,  
Bears this trembling soul away.

## Review of the Past Two Weeks.

A sensation was produced in telegraphic circles on Wednesday last, by the following open letter being received at the Western Union headquarters:

EXECUTIVE OFFICE OF THE  
MUTUAL UNION TELEGRAPH COMPANY, }  
NO. 41 PINE STREET, NEW YORK, Oct. 19, 1881.  
TO THE PRESIDENT AND DIRECTORS OF THE WESTERN  
UNION TELEGRAPH COMPANY:

We have in our control and now on special deposit in trust for the Western Union Telegraph Company three fifty dollar United States legal tender notes, numbered as follows: Y 49,067, series of 1869; E 175,733 and E 321,772, both of series of 1874, and one one hundred dollar United States legal tender note numbered A 80,153, series of 1878.

These notes, being in all \$250, were paid by certain officers and directors of the Western Union Telegraph Company (the hundred dollar bill having come directly from the treasury of that company) to a clerk in the employment of the contractors building the lines of the Mutual Union Telegraph Company, to induce him to take from his employers, for the benefit of the Western Union Telegraph Company, certain documents and extracts from documents which it was hoped might be used to the injury of the Mutual Union Telegraph Company.

We have also an original letter of Erastus Wiman, of the firm of Dunn, Wiman & Co., one of the directors of the Western Union Telegraph Company, directing the payment of the money to the clerk, and requesting that one of the documents thus to be obtained from him should be delivered to the general manager of the Western Union Telegraph Company; also the receipt of Thomas T. Eckert, the General Manager of the Western Union Telegraph Company, for the paper delivered in pursuance of Mr. Wiman's request, which receipt discloses upon its face a knowledge of the source from which the paper was obtained; also a memorandum in the handwriting of D. H. Bates, Assistant General Manager of the Western Union Telegraph Company, specifying certain additional information which the clerk was expected to procure; also an autograph letter of Erastus Wiman offering to provide the clerk with a situation at a salary of \$1,000 per annum in the event of his losing his present situation, and we are credibly informed that the assurances of this letter were verbally confirmed in the strongest manner by Mr. Eckert and Mr. Bates.

How far this conspiracy has extended we, of course, cannot positively know. The list furnished by Mr. Bates implies the necessity of suborning confidential clerks in the office of the Mutual Union Telegraph Company, but before it shall be carried any further we make this appeal to the governing body of the Western Union Telegraph Company that it be stopped.

If the persons named are so useful to the Western Union Telegraph Company that their services cannot be wholly dispensed with, we respectfully request that their zeal be restrained within the limits of common honesty, and that in their efforts to break down the Mutual Union Telegraph Company they shall not be allowed to break down all the rules of morality and business honor and all sentiments of fidelity and loyalty in employes toward their employers.

Permit us to remind you that the Western Union Telegraph Company is engaged in a business which

makes its employes the repository not only of papers relating to its own transactions, but of the business and domestic secrets of thousands of others. Such a corporation should be the last to engage in corrupting the clerks of others.

We respectfully request that all of the papers relating to our affairs which have been procured in this dishonorable manner be returned, and that hereafter the opposition to this company be limited to an honorable rivalry.

The very high character of the large majority of the directors of the Western Union Telegraph Company, and the relations which they sustain to the other great corporations of the country, give us every confidence that they will not, even by their silence, appear to approve of this conduct of their associates.

The \$250 will be returned when application shall be made for it and a proper receipt given.

In conclusion, it should be said that the value or importance of the documents obtained in the manner stated is no part of the issue between us. It is the method by which they were procured that is alone the ground of our objection and protest.

By order Executive Committee,

C. F. PECK, Secretary.

This letter was sent registered through the post office, to each director of the Western Union, which, of course, necessitated their signing a receipt for it.

It fell like a thunderbolt among the Gould people. Mr. Erastus Wiman, who is thus charged with trying to "compete" with a rival company by corrupting its clerks, will be remembered as one of the newly elected members of the Western Union Board of Directors. He expressed himself as "perfectly thunderstruck," as, in fact, he must have been. Gen. Eckert acknowledged having received a copy of the communication, but declined to say anything whatever in regard to the matter. He refused to affirm or deny the correctness of the statements.

Mr. D. H. Bates, bland as ever, said, "I have not received any such communication and I have not heard of its existence until now. I know nothing about it."

Other prominent officials expressed a similar degree of ignorance and innocence, it being the general impression that the letter must have been written by that One Man in Charleston, or some other wicked party. It was rumored late in the day that that great exponent of Truth, Mr. Giovanni (not George) Purissimo Morosini, had been carried home in a blanket by four able-bodied line-men, so shocked were his sensibilities at this apparent exhibition of epistolary depravity.

Under the pressure of public opinion something had to be done, and the duty thereupon devolved upon Mr. Wiman of wriggling out of it in some way. At first he said there was "not a shadow of truth" in the letter. Then he said he *might* have written so and so; and then, regarding his alleged effort to bribe a clerk, he said (interview in the New York *Herald*):

"When I come to think of it, I am not sure but I am able to rightly conjecture the origin of the offer of a \$1,000 position to a clerk. In the brief time I have been director I have received many applications for positions. Mr. Martin, of the firm of Messrs. Satterly, Bostwick & Martin, wrote to me for a phonographer. Having heard through my own phonographer of a young man wanting such a place, I wrote to the latter that he could have the place, and that the salary would be \$1,000. This possibly may be the foundation of this part of the story."

Subsequently, Mr. Wiman published a reply, taking the responsibility for writing the letter upon himself, giving his reasons therefor, and absolving General Eckert and the other officers of the Western Union from all connection with it.

The full text of Mr. Wiman's letter is as follows:

NEW YORK CITY, Oct. 20, 1881.

Dr. Norvin Green, President W. U. Telegraph Co.:

DEAR SIR: The Mutual Union Telegraph Company has published a letter to your company containing averments in which I am involved, and in which the attempt is made to connect your company with certain personal transactions of my own.

The simple fact is, that having been for many years interested in Canadian telegraph matters, and being now president of an organization which embraces all existing lines in Canada, I was naturally concerned at the proposition of the Mutual Union Company, under the guise of the Canada Mutual Company, to add to the number of telegraph lines in the Dominion, already more than sufficient for the wants of the public.

I found, also, reason to believe that the proposed line was about to be constructed under a contract of such a nature that, if its provisions were fully and certainly known, no such subscriptions would be made as were necessary to enable the new line to be built.



At this time a person not connected, either with the Mutual Union Telegraph Company, or with its contractors, voluntarily offered to procure me a copy of the contract. Such contracts in England and Canada are public property, invariably accessible to all subscribers to the funds of such companies, who certainly have everywhere a right to know the terms on which their money is to be paid out. I was at the same time an owner of stock in the Mutual Union Company, and was entitled to know its affairs. Friends of mine, moreover, who were large subscribers to the bonds of that company, had in vain endeavored to learn upon what terms the lines of the company were being built.

Under these circumstances, I agreed to pay the person who had offered me the copy of the contract for such a copy, without inquiring as to where he got it. I desired to take it to Canada with me, and he did not deliver it in time; but just as I was leaving on the train he sent me a note stating his inability to deliver it at the time, and asking where it should be sent. I then sent him written instructions to take it to General Eckert, and ask him to pay for it and hold it until my return. It was so taken to General Eckert, who simply signed, without scrutiny, a receipt handed to him with the paper. The payment was made for my account, and afterwards repaid by me.

In receiving and paying for the paper, General Eckert merely did a friendly act for me in my absence, and without any previous knowledge or acquaintance with the matter whatever.

As for Mr. Bates, his connection with the affair was simply this: He was asked by the party to examine the paper after it had been delivered to General Eckert, in his presence. He did examine it, and seeing that the copy of the contract failed to disclose several features ordinarily exhibited in such paper, as, for instance, the security for its performance, who were the custodians of the money and securities, and the amount of securities issued, made a memorandum of these points. This information, with the copy, was afterward delivered to me. No paper of the Mutual Union Telegraph Company is, or has been in the possession of your company, so far as is known to me, and none is, or has been, in my own possession, unless the copy of the contract which I have can be so considered, and to which I believe myself to be fully entitled.

Yours, very respectfully,

ERASTUS WIMAN.

The contract spoken of is then made public. It bears date April 14, 1881. The parties to it were the Mutual Union Telegraph Company, and John G. Moore and Thomas C. Purdy, partners under the firm name of John G. Moore & Co. This firm agreed to build telegraph lines of the aggregate length of 13,000 miles, with an average of four wires, as good as the lines of the Western Union Company; to procure rights of way and all other privileges, including patent rights; to establish and equip offices; to pay expenses of litigation, interest on the company's bonds for three years not exceeding \$300,000 a year, and to advance money for working expenses for three years, to be paid out of the first earnings of the company.

For these and other services the company agreed to pay John G. Moore & Co. the sum of \$14,000,000; \$4,500,000 in six per cent. bonds and \$9,500,000 in stock at par. The firm was required to give a bond of \$500,000 for the faithful performance of its agreement.

Upon reading Mr. Wiman's "explanation," Mr. Peck, the Secretary of the Mutual Union, said:

"Everything we stated in our letter we intend to prove. As to Mr. Wiman's epistle, it is a fabrication from beginning to end, in fact, an afterthought, bosh and nonsense. I can even go as far as to say that his assertions are wilful and deliberate falsehoods. We have not only the letters in our possession, which he yesterday denied ever having written, but we also have three witnesses to prove that those letters are authentic. Two of the witnesses saw Wiman write the letters, and the third one heard him relate the entire story of the transaction. So, you see, he hasn't the smallest loophole of escape."

On the following Monday (24th) the Mutual Union sent a long communication covering nine printed sheets and signed by the secretary, as below, to the directors of the Western Union. It refers at length to the above reply of Mr. Wiman, and says:

Having made these charges, we deem it our duty to you to produce the evidence, which to our minds conclusively proves:

First—That Mr. Erastus Wiman personally arranged for bribing a clerk in the office of the contractors; that he directed the money to be paid to the clerk with full knowledge; that in this way the document was to be surreptitiously obtained; that before the exposure he expressed his anxiety lest the matter might come to light and he and his associates be thereby disgraced.

Second—That Mr. Eckert, vice-president and general manager of the Western Union Telegraph Company, and Mr. Bates, his assistant entered heartily

into Mr. Wiman's scheme, approved of it and aided in carrying it out.

Third—That all three were doing this in the interest of the Western Union Telegraph Company and in their zeal for its service.

The charges are then taken up in their regular order. Discussing the question of Mr. Wiman's personal guilt, the letter refers to the fact that the affidavit of Benjamin M. Plumb (formerly associated with General Eckert and Mr. Bates in the American Union, now president of the Fabric Ornamenting and Manufacturing Co.), which is annexed hereto, recites that Erastus Wiman called on him at his office and asked his assistance in procuring papers of the Mutual Union Company; that he agreed to pay well a clerk in the office of the contractors whom Mr. Plumb said he knew, if he (the clerk) would procure a copy of the contract for him. Mr. Plumb, in his affidavit, details the fact that numerous conferences of the same tenor followed this one, during which the name of Henry G. Fearing was used as the clerk to be bribed. He explains that on a certain day when Fearing was expected to get hold of the paper, Mr. Wiman sent a stenographer to his (Plumb's) office for the purpose of making a rapid copy of the document, which, however, was not then available. At another interview he says Mr. Wiman gave him three \$50 bills to be paid to the clerk for his treachery, and an autograph letter, of which the following is a copy:

HENRY G. FEARING: Mr. Plumb says it may be necessary for you to change your location and may want employment. As I understand you are a good phonographer, I may want a party, and if you get out of employment you may count on me for employment at least \$1,000 per annum.

DUN, WIMAN & CO.,  
ERASTUS WIMAN.

NEW YORK, Oct. 13, 1881.

Mr. Plumb says further that he explained to Mr. Wiman how the clerk would get possession of the paper, telling that he had possession of the keys of the safe on Saturday, when the cashier of the firm was ordinarily out of the city, and that he would have to purloin it from the safe to get a copy of it. "Mr. Wiman," he adds, "acquiesced in this, and said it was of the greatest importance to his company, and to offer the clerk more money than the amount before stated, if necessary, to get the document." On October 13 Mr. Plumb says he sent the following note to Mr. Wiman:

NEW YORK, Oct. 13, 1881.

Personal.

DEAR MR. WIMAN: I have seen "Fearing" and shown him your letter offering him employment. He is all right and has got the copy of the contract all complete, but insists that as he stole it he is running great risks, and now wants more than the \$150 you gave me to give him. The fact is, his cupidity has been excited by the newspaper talk about this matter, and he now wants \$250. Shall I give it to him? and what shall I do with the contract when I get it? Hastily yours,

B. M. PLUMB.

This letter, the affidavit continues, was delivered to Mr. Wiman at the Grand Central Depot, as he was about to take the train for Montreal. After reading it he wrote the following reply and handed it to the messenger for delivery to Mr. Plumb:

DEAR P.: Give him the \$250 after he has read it over to you, if you find it very favorable to contractors. Perhaps it isn't worth it. I would go the \$250 if you like. Keep it till I come, or hand it to the Gen'l.

E. W.

The letter of the Mutual Union's secretary, after reciting the fact that the messenger who delivered these notes read them both and now makes affidavit as to their correctness, says: "These two notes convict Mr. Wiman of nearly all that we have charged, and show the falsehood and weakness of his pretense that he did not know how the papers were to be procured." At a subsequent interview between Mr. Wiman and Mr. Plumb, at which a stenographer was present as a witness and took a verbatim report of what was said, the following remarks of Mr. Wiman are detailed:

Tell Fearing he need not be alarmed at all, to stay where he is for a long time to come; that there is lots of money he can make by remaining there. \* \* \* There are several other documents which are very important, and which we want him (Fearing) to get, if possible. (Then follows an enumeration of the desired contracts, specifying particularly the one between the Mutual Union Telegraph Company and the Baltimore & Ohio Railroad Company.) Tell Fearing he shall be kept in the background all the time, and

need never come forward to be known in this matter if he works properly. We will get these Mutual Union folks on the rack yet.

Mr. Plumb states that he questioned Mr. Wiman as to how Mr. Eckert and Mr. Bates regarded the stolen paper, and he replied:

"Oh, they regard it as a big bonanza. You and I never did such great work as we have done in this matter. It is perfectly marvelous work, performed in so short a time. But we must be very careful. The Western Union folks are anxious that we shall not be disgraced in this matter. \* \* \* I wish, Mr. Plumb, you would arrange so I could substitute another letter for that one Fearing has got. I don't want it on your heading of paper, and I want it written carefully."

"I wrote that letter very hurriedly, and I am afraid I was not guarded enough in its statements. There is no use running deep risks where they can be avoided. Suppose he should drop the letter and it should be found by other parties, it would hurt us."

The letter next considers the question of the complicity in the matter of Messrs. Eckert and Bates, both of whom, he charges, knew as much about it as Mr. Wiman. In that part of his affidavit relating to these gentlemen, Mr. Plumb says that he discussed with them the best way of making the payment of the extra \$100 demanded to Fearing. Mr. Plumb suggested that the best way would be for him to take the company's check to his own order and pay the \$100 in currency. General Eckert, he adds, approved this plan, and Mr. Bates wrote an order to R. H. Rochester, the treasurer, and taking it from the room returned afterward with the money. Mr. Plumb adds in his affidavit:

At this interview the subject of a letter from Gen. Eckert or Mr. Bates to Fearing, guaranteeing the employment already promised by Mr. Wiman at a compensation equal to that he was receiving from John G. Moore & Co. aforesaid was discussed, Mr. Bates saying that he did not think it would be wise for either of them to write such a letter to Fearing; and General Eckert stated to deponent that the objection to the writing of such a letter was that said letter might get astray and be traced. At this interview General Eckert assured deponent that Fearing should be taken care of, as already promised by said Erastus Wiman; that it was all right, but that it would not do for them to write such a letter.

The letter says further that after Mr. Plumb had given the Mutual Union the information contained in his affidavit, he insisted that an interview should be held between himself and Mr. Wiman, at which any witness they might name should be present. The company deemed this but justice to Mr. Plumb and to Mr. Wiman, and they sent as a witness the stenographer mentioned above. At that interview Mr. Wiman asserted that Edwin Lord was about to bring a suit against the company for a bill of discovery. In concluding its history of the affair the letter says:

When a man sets about the commission of an act which, if exposed, will render him infamous, we must look somewhere for a motive commensurate with the risk. That the conspiracy, which was organized to bribe a confidential clerk to commit a larceny, was in the personal interest of Mr. Wiman, will not be believed by anybody; or that it was necessary to steal papers which the Court would compel us to produce, if Mr. Wiman had any lawful ground of complaint as a stockholder of this company. Mr. Wiman is a director of your company, and the President of your Canada enterprise, known as "The Great Northwestern Telegraph Company." Our company, when completed, will, through our allies, compete with you in Canada as well as here, and to defeat our enterprise and thus destroy competition, it would, in the estimate of Mr. Wiman, be advantageous to procure and publish "any information reflecting upon the management of the Mutual Union Telegraph Company, or of the private character or business of the officers thereof."

After offering to produce to the President of the Western Union Company any or all of the original letters and papers mentioned above, including General Eckert's receipt for the contract and Mr. Bates' memorandum of what was further required from Fearing, the letter says it is but simple justice to the latter and to Mr. Plumb to say that they acted in the matter only for the purpose of exposing the misconduct of the persons who sought to make them instruments in the commission of a crime.

In reply to all this Mr. Wiman said to a reporter: "It is a deep laid conspiracy for my betrayal. That it was concocted by the parties concerned is evident from even a hasty perusal of the nine columns of statement of the executive of the Mutual Union Telegraph Company in reiterating its charges against me. That it was a



plot into which even the most wary might have fallen there can be no doubt, from the preconcerted series of events as detailed in the statement."

He said further that the matter of getting a copy of the contract was brought to his attention by Mr. Plumb. He followed it up, he added, because he desired to expose the attempt to "demoralize the telegraph business in Canada," where he has large interests. He said that he may have remarked that the officers of the Western Union Company would be gratified to see the contents of the contract, but that he did not represent himself as acting in their behalf. Mr. Wiman said that when he promised Fearing employment he did not know that Fearing ever was with John G. Moore & Co. "The affidavit of Plumb," Mr. Wiman said, "is a tissue of falsehoods, and most of it can be proved utterly untrue by witnesses present at the interview he describes. That being so, all else falls to the ground."

Mr. Plumb, however, states that after the propositions of Mr. Wiman to obtain the papers and information respecting the Mutual Union by corrupting an employé of that company, took counsel with a number of prominent public men and was advised by them that it was a duty he owed the business community and the public generally to act so as to bring about a thorough and complete exposé of the nefarious transactions of Wiman and those he represented as acting with him. Mr. Plumb adds that should it be found necessary all the gentlemen with whom he consulted—and several of whose names he gives—will not hesitate to corroborate this statement.

In a newspaper card, the Mutual Union and John G. Moore & Co. say that Mr. Fearing, mentioned above, instantly revealed the alleged conspiracy to them, and add that his integrity is unquestioned and that he has their full confidence.

Another shot was fired into the Western Union camp last Monday by the brokers. At a meeting of the Petroleum Exchange on that day, a committee was appointed to lay before the Western Union Telegraph Company the defects of the telegraph service furnished to the Exchange, and to see if they can be remedied. The committee was also instructed to wait on the Mutual Union Telegraph Company and learn what service it is prepared to give.

The existence of the Union Telegraph and Construction Co.—which is the alleged construction company inside the alleged Mutual Union ring and about which Mr. Wiman was so anxious—is strenuously denied by the Mutual Union people and as vigorously reasserted by their opponents.

Meanwhile the Mutual Union is pushing ahead and expects to open for business to-day. The Western Union can no longer be called a monopoly. Many of its operators have left, and more are about to leave, to join the Mutual Union at increased salaries. These resignations are philosophically received by the officers of the Western Union, who make scant comment on them, having evidently some plan in reserve to meet the emergency. In some exceptional cases operators have been induced to withdraw their resignations, the consideration in each case being an increase of salary and a kind of permission to hope that salaries will be made more equitable in time to come. The seceding operators are mainly conspicuous examples of the effects of the pulverizing system which elevates one set of men at the expense of another, and which was introduced at the time of the consolidation. In nearly every instance the defection is from the ranks of the old Western Union force; those who were until lately American Union men having apparently nothing to gain by leaving the new Western Union Company.

The reported "fair action" of the Western Union in paying liberally for Sunday work turns out to be a first-class joke, since no man can be found who has received a single cent for Sunday work. This part of our "Review" is respectfully referred to the Brotherhood of Telegraphers. The rumor probably arose from the fact that in several large offices the men were paid extra for one Sunday—an extraordinary occasion—during the illness of the late President Garfield. We should like to hear from the rank and file on this subject.

The villainous system of chopping the opposition's poles is not allowed to languish, since, for a few dollars a day—or night—a telegraph company is able to hire a few unprincipled ruffians—mostly recent importations from abroad, for we should blush to call them Americans—who, with hatchet and saw, pursue the work of devastation and ruin. It will probably go on until the oppressed party carries the disgraceful system so its natural sequence—blowing up the main office of its rival. Both propositions are beneath the consideration of honorable men, but one is no worse than the other.

On Saturday last, Oct. 22, the grand jury of Essex County, N. J., found indictments against Hugh McAleer, superintendent of construction; Nicholas Y. Bradford, foreman of construction, and John Davis, lineman, of the Western Union Telegraph Company, for conspiracy. The indictments are founded on complaints made against the defendants some weeks ago by the officers of the Bankers and Merchants' Telegraph Company of this city, whose poles in the vicinity of Franklin they are charged with having cut down. A special constable of Essex County, who made the arrests, asserts that he caught at least one of the parties indicted in the act of cutting down the poles of the Bankers and Merchants' Company. Efforts will be made to have them indicted in other counties as soon as the grand juries meet.

We give this statement with caution, since one at least of the defendants—McAleer—is personally known to us as an honorable and conscientious man. We should be loth to believe that he is guilty of a sneaking crime, compared with which burglary and arson are respectable, and should accord to him the common right of being held innocent until he is proved guilty.

Electric light circles have been much agitated by reports of the great danger consequent upon the careless use of the light. The commotion first arose from the statement that the disastrous fire at Philadelphia, on the 12th ult., which caused the death of nine persons, originated from an electric light. An immense amount of newspaper argument followed, opinions being wide apart upon the subject. During the discussion, however, it was shown that fires have originated in this way, and that many men have been killed by electric light machinery. One of the workmen at the mill where the terrible sacrifice took place swore that only a few weeks previously the same electric light set fire to some cotton waste in the same mill, but that it was quickly extinguished and the matter hushed up. To crown all, the coroner's jury found, among other findings, that the building was set on fire by a defective electric light. Among other valuable opinions given, Mr. David Brooks, the electrician, said that "an electric light, with bare wires and unprotected burner, hung in a mill where there is any inflammable material whatever, is like throwing a match among a quantity of powder."

The past fortnight has been remarkable for tremendous storms on both sides of the Atlantic, in which the telegraph companies have suffered severely. At Cheyenne and thence westward the havoc was complete, and while repairmen were re-erecting the wires a sleet storm was tearing them down again. Telegraphic business, greatly delayed, was carried over the breaks by special engines. The hurricane in England, on the 14th and 15th ult., prostrated all the wires in the country; while from breaks and the influence of aurora borealis, the cables connecting that island with the continent were rendered useless. At one time communication with the outside world was completely cut off.

Advices from London report fair prospects for the telegraph in Mexico, Central and South America. One thousand miles of cable for the Central & South American Telegraph Company were completed in London, Oct. 13. Two cable steamers will sail on Nov. 15, and others will follow rapidly. Cable communication with Brazil will be established in May next, via Mexico, Central and South America. The traffic will be controlled exclusively by the four companies, namely: The Western Union Telegraph Company, Mexican Telegraph Company, Central & South American Telegraph Company, and West Coast of America Telegraph Company.

Telegraph stocks have, in the main, been steady during the past two weeks. On the 15th ult. Western Union stood at 86½, and to-day it is 87¼.

## A Short Explanation of the Blanchard Foods, With Suggestions Respecting Their Use.

The Blanchard series of concentrated and semi-digested liquid foods are extracts from wheat, beef and milk. They are adapted to build up the physical system, strengthening at once the mind and body, and repairing all conditions of debility of the nervous tissue and digestive organs.

The first in this series is the beef and milk, which contains in each quart the nutritive elements in thirty-two pounds of beef, and six quarts of milk: This combination having been subjected to the process of artificial digestion, has been found on trial to be the most admirably adapted of any known agents to meet the wants of a torpid, enfeebled or crippled digestive function that in one form or another accompanies scrofulous consumption, Bright's disease, diabetes, chlorosis, cholera infantum, all sorts of uterine disease, carcinoma, syphilis, and all the stages of convalescence in yellow and remittent fever, and also in all diseases of a malarial and miasmatic origin, together with nervous debility, which underlies all forms of chronic disease. For weakly, puny children this food is invaluable.

This digested food the weak and debilitated patient can use, and with it build up so that in a short time the fibrin and wheat can be taken, and later the tonic extract of wheat.

The FIBRIN and WHEAT contains in each quart the fibrin property in sixteen pounds of Beef, and the nerve-building elements in one-half bushel of wheat, which have been subjected to the process of artificial digestion. This is a preparatory food, and should be used previous to the tonic extract of wheat, for conditions of debility and irritation of the stomach and alimentary canal, exhibiting themselves by loss of appetite, failure to retain food, flatulence or oppression in the stomach after eating, dryness of the mouth, etc., and also for all chronic constipated conditions. Usually one-eight ounce bottle of this will strengthen the nervous system and muscular tissue of the stomach sufficiently so that the tonic extract of wheat can be used with greater efficacy.

The BLOOD AND NERVE FOOD, or TONIC EXTRACT OF WHEAT, is manufactured from the exterior of the wheat kernel, by a process peculiar to ourselves, by which the vital nutritive elements, the iron, phosphorous, lime, etc., which are in the highest degree food to the plastic element of the blood and nervous system, are extracted without chemical change, so that the condition called vitalization, given them by vegetable growth, is retained, the product becoming a nutritious, concentrated liquid, every quart of which contains the vital nutritive elements in a bushel of wheat.

This food is designed to meet the wants of the nervous tissue, to repair the waste resulting from vital activity in all cases when there is no serious impairment of the function of digestion.

For those engaged in literary or professional labor, exposed to severe mental strain, this force is invaluable.

The CARBONACEOUS FOOD is designed for external application, and for use in cases of consumption and chronic diseases of a severe type, to assist the function of digestion, by applying elements that are taken up by absorption.

By its use the system may be in a large degree supplied with fat-forming food or fuel for the maintenance of animal heat without taxing the digestive organs. The external application of this food is far more efficacious than the internal administration of cod liver oil, the effects of these two being identical.

The life food consists of a combination of the fibrinous property of beef, and the nerve-building elements of wheat, so thoroughly digested that it will enter the blood within five minutes after being taken into the stomach. A dessert spoonful of this perfect food, taken with a glass of milk, is a beverage of agreeable flavor, which imparts immediate invigoration; it is recommended to all as a strengthening drink. It has no alcoholic property. This food is especially adapted to be taken between meals, in water or milk, to relieve a sense of "goneness," weakness, or craving, which characterizes extreme nervous debility, especially in patients suffering from tobacco, alcohol or opium habit.



Let it be borne in mind that in all of these foods a large proportion of nitrogenous element has been eliminated; as well as all other elements that do not possess vitalizing invigorating quality.

These foods are curative, but no medicine or drugs enter into their composition. The business man, weighed down with commercial affairs, the student, lawyer, minister or doctor, contracting a debilitated condition by over brain-work; woman overburdened with cares of maternity; the child suffering with the ills of childhood; in fact, all conditions are built up by these simple, easily-digested and concentrated foods.

THESE FOODS are to be taken directly after meals in quantities from five drops to a teaspoonful, varying according to age of the person and condition of the digestive organs.

With the foregoing explanation, any one can decide which preparation it is desirable to use first.

#### APPLICATION OF THE BLANCHARD PREPARED FOODS.

In the application of the Blanchard Prepared Foods in the first or premonitory stages of consumption, Bright's disease, diabetes, chlorosis uterine disease, dyspepsia, carcinoma, syphilis, and all diseases of a hereditary or specific origin, as well as after the disease has become developed, the patient should first commence with the beef and milk, taken after each meal, according to directions, the life food being also taken between meals, and the carbonaceous food being applied on going to bed. After the system of the patient has become considerably toned up and invigorated by this method, the fibrin and wheat should be substituted for the beef and milk, the patient meanwhile continuing the use of the life food and carbonaceous food. After the patient's digestion is fully restored and the natural strength nearly regained, the tonic extract of wheat, should be substituted for the fibrin and wheat, and at this point the carbonaceous food may be omitted, although the use of the life food should be kept up. In order to insure permanent results the use of the tonic extract of wheat and life food should be continued some length of time after the patient has regained a normal degree of endurance, weight and vigor. While taking the Blanchard Prepared Foods the patient should avoid as far as possible the use of starchy foods, such as potatoes, rice and farina, and also rich pastries and condiments. Alcoholic beverages, cordials and tobacco should be avoided. Graham bread, gluten, wheaten grits, and oat meal may be eaten. Milk should be taken with each meal in quantities the stomach will bear, to which should be added on each occasion for the first month two tablespoonfuls of lime water. Milk, from which the cream has been taken, is sometimes better adapted for the dyspeptic stomach than in a natural state. Fish, eggs and lean meat (beef preferred) may be eaten freely, also an abundance of ripe, sound fruit. A sponge bath daily, with vigorous friction applied to the skin, is a valuable auxiliary. If the habit of costiveness is present, the patient should use an enema of warm water daily until the natural function is restored. The patient should avoid all laxative and cathartic agents; retire early to bed, and avoid over exertion, mental and physical, until the health is fully restored.

#### DEPOTS.

New York City, 27 Union Square, 163 Broadway.

Harlem, Benson's, 2,334 Third avenue.

Brooklyn, Lizzie S. Hubbard, 284 Fulton street.

Portland, Me., J. W. Perkins & Co., C. H. Wharf.

Hartford, Conn., L. H. Goodwin, corner Main and State streets.

Philadelphia, Pa., Johnston, Holloway & Co., 602 Arch street.

St. Paul, Minn., Noyes Bros. & Cutler.

St. Louis, Mo., A. A. Mellier.

San Francisco, Cal., E. M. Domett, 714 Shotwell street.

Boston, Mass., J. Jay Watson Co.'s Agent, 28 Schoolstreet.

Boston, Mass., Smith, Doolittle & Smith, 24 Tremont street.

Syracuse, Kenyon, Potter & Co.

Cleveland, Ohio, S. P. Churchill, 32 Euclid avenue.

Washington, D. C., W. S. Thompson, 703 Fifteenth street.

Cincinnati, Ohio, Rauchfuss, Naglo & Co., 224 Main street.

Chicago, Ill., Morrison, Plummer & Co.

Chicago, Ill., Gale & Blocki.

General agent for the Southwest, Joseph B. Gribble, 96 Canal street, New Orleans, La.

BLANCHARD MANUFACTURING COMPANY, PROP.,  
27 Union Square, New York City.

#### The Electrical Exhibition at Paris.

[From the Special Correspondent of The Operator.]

As the season wears on and the cool weather approaches, the great interest manifested in the exhibition up to within a couple of weeks seems to be cooling off also, and the crowd becomes thinner and thinner each day. The congress has adjourned and the juries have completed their work and announced the results of their investigations. Now that the serious part of the show is finished the fête season is commencing, and we hear of a number of jollifications that are to take place or have already passed. The Maxim and Weston electric lighting companies gave a dinner on Wednesday, Oct. 12, at the Café Riche to the American exhibitors, several French electricians and members of the foreign press resident here. There were in the neighborhood of 200 persons present, and a most enjoyable evening was spent. The French members of the press gave a dinner to the foreign members in the Hotel Continental on the following day, and on Saturday evening there was a special occasion at the Grand Opera for members of the congress, followed on Tuesday, the 18th, by a promenade to examine the various systems of electric lights that are being placed in the Opera-house. I was slightly in error in my last letter in saying the contract for lighting the Opera-house had been given to the Edison Company. The government authorities having the matter in charge invite the several incandescent and the most prominent arc light companies to place a few of their lights in the Opera-house for a few days for a competitive trial, at which it would be decided which company should have the permanent lighting of the house. The Edison, Maxim and Swan incandescent, and the Brush, Jablochhoff and Werderman arc light companies are among those who have accepted the invitation, and will have specimens of their lights on exhibition. The Edison Company have been assigned to the lighting of the foyer, while the Swan people have the grand chandelier, each system having about 600 lamps.

Among the things to be seen in the American section is a novel method for winding magnets. The convolutions of wire wound one over the other, as at present, are dispensed with and replaced by a copper band about three-eighths of an inch wide and very thin. This band is wound spirally around the cores in such a manner that its inside edges are placed on each core. The parts of the spiral are insulated from each other by being covered with a coating of shellac, which makes such a thin insulation as to allow of from one to five hundred convolutions of the spiral to an inch. The advantages claimed for this system are that much more magnetism can be developed than by the old system, with less resistance; also that there being but one layer of convolutions, with the outer edge of the spiral exposed to the air, there is no heat accumulated near the magnet, because any heating caused by the passage of the current is conducted to and carried off by the air. Experiments made with a magnet wound with one of these spirals showed one-third more power than one wound in the old way having the same total section, weight and resistance. The exhibitor is Mr. Dion.

Professor Bell's photophone and radiophone have just arrived, and the apparatus has been placed in our section. The instruments are not connected up and no experiments are being made, consequently they attract but little attention. Professor Bell himself has sailed from America and is daily expected here.

Mr. A. Pzatz, of Philadelphia, shows a new form of one liquid battery, the mechanical novelty of which consists in a hollow cylinder of carbon dotted with pores, forming a circular row of bars

for the double purpose of increasing its surface and causing a free communication of the liquid, the zinc being suspended in the cylinder. The liquid consists of a compound solution of chloride of zinc and bichromate of ammonia. The initial electro-motive force is 1.65 volts and the resistance 1.6 ohms. This battery is intended for the same purposes as the Leclanché.

#### Medals for American Exhibitors at Paris.

A dispatch from Paris, on the 14th ult., says that the jury of the International Electric Exhibition has awarded gold medals of the highest class to Edison and Brush for dynamo-magnetic machines, and a gold medal to Maxim. Also, gold medals to Edison, Brush and Maxim for arc incandescent lights. Edison takes five gold medals in all, being more than any other exhibitor. He was also awarded the highest prize diploma of honor. Five different juries examined his exhibits.

As a mark of the greatest distinction, diplomas of honor have been awarded to the United States Signal Office, the Smithsonian Institution, the United States Patent Office, and to Messrs. T. A. Edison and A. Graham Bell.

Gold medals were awarded to the Anglo-American, Brush, and United States electric light companies, and to Professors Elisha Gray and Sumner Tainter.

Silver medals to J. F. Bailey; W. G. A. Bonwill, of Philadelphia; Connolly Brothers and McTighe, of Washington; A. Emerson Dolbear, of Somerville, Mass.; Electric Purifier Co., of New Haven, Conn.; Chas. W. Hubbard, of Boston; W. J. Phillips, of Philadelphia; Pond Indicator Co., of New York; Western Electric Mfg. Co., of New York and Chicago; Weston Electric Light Co., of Newark, N. J.; Electro-Dynamic Co., of Philadelphia; also to Messrs. Eccard and Puskas or Puskas, neither of whom we can find on the list of exhibitors.

Bronze medals were awarded to Messrs. V. Chavet; George Cummings, of New York; Hoo-sac Tunnel Tri Nitro-Glycerine Works; August Partz, of Philadelphia; Photo-Relievo Co.; White House Mills; Charles Williams, Jr., of Boston; and a Mr. Dion, whose name we are also unable to discover among the official list of American exhibitors.

Diplomas of honor were given to various railway companies, including English, Australian, Spanish, Italian and American; to the Breguet-Christophle Telephone Company, and to the inventors Baudot, Edison and Siemens.

#### A New Electric Bell.

In our present issue the Long Distance Electric Call Company advertise their new patent call bell. This bell will doubtless attract considerable notice as a novel invention, claiming results which have not previously been attained by an electric bell. It is a simple and most ingenious call, and will probably be advantageously adapted to other purposes than telephone uses. But as a call for telephone exchanges it lays claim to strong points in its favor, and noticeably, among others, the instantaneous warning which is automatically given when a break occurs in the line. With a monitor of that kind at his elbow, the subscriber will naturally feel that he cannot be cut off unexpectedly from the central office without receiving timely notice.

The secret of the invention seems to be the appreciative control of the electric current and the successful utilization of a very slight electric force to operate a most ingeniously devised mechanism whereby the results claimed are obtained.

#### Weather Wisdom.

When you wish to know what the weather is to be, go out and select the smallest cloud you see. Keep your eye upon it, and if it decreases and disappears, it shows a state of the air which is sure to be followed by fine weather; but if it increases in size, take your great coat with you if you are going from home, for falling weather is not far off. The reason is this: When the air is becoming charged with electricity, you will see every cloud attracting all lesser ones toward it, until it gathers into a shower; and, on the contrary, when the fluid is passing off, or diffusing itself, then a large cloud will be seen breaking into pieces and dissolving.



## TELEPHONE DEPARTMENT.

The various fire-brigade stations of Sydney, Australia, and suburbs are to be connected by telephonic communication.

The Swiss government is establishing telephonic communication in Berne. The wires are carried over head on posts fixed to the house-tops.

In a full-page advertisement in this issue, Messrs. Post & Co. give an explanation of the operation of their latest improved and justly celebrated switch-board, which telephone men will find interesting. The most complete and perfect telephone exchanges in this country—including Providence and others—use the Post switches.

A dispatch from St. Petersburg, dated Oct. 25, says that the Russian government has determined to keep governmental control of the whole telephone system now being erected, and by a relay or exchange system involving a repetition its police or other officers in charge will have a knowledge of every communication over the line.

The Herz system of telephony has excited special attention among electricians in Europe, on account of the surprising distances through which telephonic communication has been maintained by it, and especially since the announcement that a conversation had been carried on through the cable connecting Brest and Penzance—a thing generally considered impossible, on account of the comparatively sluggish action of the electric current in submerged cables. The Herz system—by which conversation, it is stated, has been carried on through an actual distance of over 600 miles over circuits having no special adaptation to telephonic communication—claims to have solved two difficult problems, viz., that of increasing the amplitude of electrical vibrations, and of neutralizing currents foreign to the telephonic circuit.

In the suit for infringement of patent by John H. Irwin and the Western Electric Manufacturing Company against the Metropolitan Telephone and Telegraph Company and another, Judge Blatchford in the United States Circuit Court, on the 21st ult., in this city, handed down the following decision: "I think the proper and necessary construction of claims one and two is that the normal pressure of the electrode must be obtained by means of gravity counteracted partly by a delicate retractile spring, elastic in the direction opposed to gravity. The spring must suspend the needle against the force of gravity. The defendant's instrument does not employ gravity to secure pressure, nor a spring to modify the force of gravity, but it obtains the normal pressure of the electrodes by the direct strain of a flat spring. There is no infringement of claim 3. The vibrating disk of the defendants does not have free edges, and is not capable of vibrating bodily in the sense of the patent. In consequence of being held by the spring and the clamp, it bends, and some parts between the centre and the edge move more than others. The bill will be dismissed with costs when the case is disposed of as to the American Bell Company."

One of the attendants at the Ithaca telephone exchange was awakened recently by the gong, and he got up to answer the call. He "helledo" until tired, but heard no response, and then turned in again. About fifteen minutes later the gong again struck, and this time he found two buttons down. He answered each caller and asked what was wanted, but again failed to get any reply. Muttering, he went back to his couch only to be aroused again by the gong. Once more he responded to the alarm, and this time there were five buttons down. The attendant, after going through this sort of business once or twice more, aroused his companion, and they resolved to investigate the cause of the mysterious calls. They assumed a position where they could see what was taking place in the room and quietly awaited another call. They had not been long on picket duty before the innocent disturber of their dreams appeared in the shape of a mouse, which little animal, by running across the key-board, caused the buttons to drop and the loud gong to sound its warning. The operators straightway set a trap for the mouse and soon had the satisfaction of catching him, after which they tried some practical experiments in electricity upon him, resulting in his cremation and undisturbed rest during the remainder of the night.

## DASHES HERE AND THERE.

The letters in the word "telegraph," when transposed, make the words "great help."

Boys, read the offer made by the Acme Mfg. Co. Printing Press and complete outfit only \$2.

What lineman can point us out a pole to beat the champion? It carries 350 wires, and stands in Chicago.

The network of German subterranean cable is completed. It connects 221 towns, and has cost about \$7,000,000.

It is said that the attendance at the Paris Electrical Exhibition is falling off rapidly, and that it will soon be closed.

From Tunis comes the news that the Arabs broke the submarine cable between Bizerta and La Calle on the day on which it was opened.

If you want to become a telegraph operator, send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.—*Advt.*

The American Electric Railway and Power Company filed articles of association at Albany, on the 24th ult. Capital, \$10,000,000. The principal office will be in New York.

A Hull (England) newspaper reports that after a month's trial of the Brush electric lights at Scarborough Spa the Directors resolved to go back to gas, and ordered the removal of the electric-lighting apparatus.

A telegraph "college" at Oberlin, O., offers the first month's board free of charge to new students. Although the telegraph business is booming, some of these "professors" do not appear to be overrun with business.

An attractive advertisement of the pianos and organs manufactured by the well-known Mayor Daniel F. Beatty will be found in another column, to which we would draw the attention of the readers of THE OPERATOR.

Farnham's Armaline is a specific and reliable cure for operators' and writers' cramp or pen paralysis. Authentic testimonials from all parts of the country. Send for circulars and treatise to Brown, Pettibone & Kelly, stationers, 194 and 196 Dearborn st., Chicago, Ill.—*Advt.*

The East is just now laughing at the great West for bulling the famous Garfield saying into "God resigns and the government at Washington still lives." The West retorts with the old bull on Sir E. Head, Governor-General of Canada, who received a telegram from an Eastern artist addressed to "Sore Head."

Consumption being more prevalent among telegraphers than any other malady, a long-tested and proved remedy for that disease is a matter of deep importance to the fraternity. For this reason it will hardly be necessary for us to draw attention to the letters of testimony in the full-page advertisement of J. H. Schenck & Son

Little 'Rastus Wiman trying lies to tell, Blund'ring and failing, then swearing like — Well,

Never mind old Peck, wipe your eyes off wid yer frock;

There's lot of money yet to make in Jay Gould's watered stock.

A system of railway carriages, worked by electricity, and constructed for the transport of postal matters through large cities, will be established at Paris, in the Palais de l'Industrie, under the gallery facing the Seine; the line will be 180 metres long. An electric elevator has been constructed, and will be placed at the disposal of the public as soon as sufficiently tried.

The Philadelphia Record, of Oct. 22, says: "A souvenir of the Electrical Exposition in Paris has been brought to this country by the Hon. Strickland Kneass, of the Pennsylvania Railroad. It is a life-like drawing of the shoulders, head, face and mouth of an officer of the French Grenadier Guards, which was transmitted a considerable distance by electricity. The drawing is about 6 inches long by 3 wide, on ordinary white paper."

At the close of the year 1880 there were in the United States 170,103 miles of telegraph lines, and during that year 33,155,991 messages were sent. The miles of wire were about 300,000, but the mileage has wonderfully increased since last New Years. This does not include the lines used exclusively for railroad business. The other countries having the greatest length of lines are

as follows: Russia, 56,170 miles; Germany, 41,431; France, 36,970; Austria-Hungary, 30,403; Australia, 26,842; Great Britain, 23,156; British India, 18,209; Turkey, 17,085, and Italy 15,864.

A full-page advertisement of the Gamewell Fire-Alarm Telegraph Co. will be found in another part of this issue. This company feels so confident of its position that it "challenges any one to show that there is in use at the present time, anywhere, a single valuable feature or improvement in fire-alarm telegraphy which it does not control." Mr. J. N. Gamewell, who has been so long connected with the company, is still the general superintendent.

News did not travel as rapidly a hundred years ago as it does in our day and generation. It was not until the 24th of October, 1781, that Colonel Tilghman brought to Philadelphia news of the surrender of Cornwallis, which virtually took place on the 17th of the same month. But still more strange, the important information of the arrival of Admiral de Grasse with his fleet in the Chesapeake on the 26th of August did not reach General Washington (then near Philadelphia) until Sept. 4 following—as Secretary Trumbull remarks—"News strangely delayed, but very welcome."

Although Messrs. L. G. Tillotson & Co.'s is the largest and oldest telegraph supply house in America, their attractive four-page advertisement in the present issue shows that they have not lost any of the judicious and intelligent enterprise which has always characterized their manner of bringing their goods before the telegraphic public. His wants must indeed be well supplied who cannot find something that he needs among their four pages of advertisements.

The Chicago Tribune is explaining to its readers how Mr. Jay Gould circumvented the Chicago aldermen in introducing the American Union lines into their city. According to the story, the statesmen wanted \$40,000 for the privilege, while Mr. Gould was only willing to buy them at a lump sum of \$20,000, and while the go-betweens were haggling over the bargain Mr. Gould secured the Baltimore & Ohio franchise, thus reaching the heart of the city without dividing a dollar among the city fathers.

"A first-class telegraph clerk in England, under the present system, may, with good luck and good conduct combined, after eighteen years' service, raise himself to a pecuniary pinnacle whereby he would be entitled to a salary of \$500 per year." Young man, if you don't like this country; if it isn't broad enough for you; if it is too new and raw and rude, if its lack of culture and old world refinement starves your intellectual being, as it were; emigrate. Go to England and grow up with the telegraph service. There's a chance for you.—*Hawkeye.*

There is a talk of organizing a pony express, as of old, to get the news each night in time to be published in the morning papers. Owing to the lack of facilities and the poverty of the Telegraph Company in not being able to pay salaries large enough to induce good men to work, the papers belonging to the Kansas & Missouri Associated Press are not in receipt of all the dispatches paid for in time to get them up and get out papers as soon as subscribers want them. Then the dispatches we do get are so mangled as to be almost unintelligible.—*Topeka (Ks.) Commonwealth.*

It is said that the whole of the Paris electric exhibition is to be transferred to London. This action is taken with a view to holding at the Crystal Palace, in December next, an international exhibition of electricity, at which all the existing systems of lighting will be presented. At the same time it is proposed to form a collection of electrical apparatus generally, including the various forms of telephones, secondary batteries and a large variety of scientific objects concerned in the production or employment of electricity and magnetism. An influential meeting at the Mansion House, on Monday last, at which the Lord Mayor presided, approved of a plan for holding an electrical exhibition at the Crystal Palace.

The Dutch claim to have been the precursors of Franklin and of Faraday. Curious old manuscripts have been exhumed in Dutch and Belgian libraries, and are now on exhibition at the Paris Exhibition to show that savans had groped



their way a long distance on the road which the Boston philosopher trod with a sure foot toward the end of the last century. Italy shows many documents to throw light on the part which scientific method and the divining powers of genius played in the discoveries of Volta.

The Buffalo (N. Y.) *Sunday Times* tells a story of an operator of that city who was thinking of emigrating to Russia, and wrote to a friend at Helovisky about wages there. He learned that "operators there received eight cents per day and found himself." "Yes, finds himself pretty hungry at times, I'm thinking," said the Buffalo man, pensively.

Important interview between General Eckert and Mr. Erastus Wiman after the publication of the Mutual Union charges:

Mr. WIMAN.—Well, General, I'm sorry, but you see we had to —

Gen. ECKERT.— — — — — !

Mr. WIMAN.—But, General, we —

Gen. ECKERT.— — — — — !! — — — ? — — —

Mr. WIMAN.—Yes, but the money —

Gen. ECKERT.— !!! — — — — — ? \$250 —

— — — \* \* \* blazes !!! Three fifty-dollar bills !!!

— — — you — — —.

Mr. WIMAN.—You're another, sir !

*Loud sounds*—Whack, thump, bump, bang, whang—(voices of numerous clerks) "That's right, General. Out the fourth story window with him"—whang, bang, thump—"Ha ! out he goes"—bump !!!

*Deep silence, slow music and blue fire.*

## NEW YORK CITY ITEMS.

### Echoes From 195.

During a rush of business to Boston last week, John K. Calvert sent 250 messages in 180 minutes on the motor.

The telegraph machinery at Yorktown, during the recent celebration, was looked after by John W. McLaren, of "195."

One of the most wide-awake, impartial and thoroughly competent men on the floor is Chief Operator Thomas Brennan.

On Oct. 25 Joe Wood, of Boston, sent Operator William Cooke, of "195," two hundred messages in just three hours, on the Boston Morse quadruplex.

When a 195-ite says—Wordsworth slightly altered—"their beauty makes me glad," he refers to the young ladies of the Eastern division.

The boys are taking a last fond look at Mr. Downer's farewell address. Somebody facetiously remarks that mourning should be removed after 30 days.

If General Manager Eckert would cause a few thousand dollars to be expended in ventilating the operating room, he would be erecting a monument more lasting than brass.

On the 15th ultimo the gallant Colonel Lenhart was seeking for the reporter of THE OPERATOR, thirsting for his gore. It was a very wet day for the poor scribe, and perhaps he might have been happier if he had been an umbrella.

### Other City Items.

Mr. W. J. Dealy returned from England on the 25th ult., looking first-rate after his sojourn abroad.

Mr. Edison has just completed a miniature electric lamp, the flame from which, though 500-candle power, will not exceed the dimensions of a silver five-cent piece.

Mr. A. B. Chandler, for the past two years President of the Atlantic & Pacific Telegraph Company, has accepted the Presidency of the Fuller Electrical Company.

Everything at "135" is moving along nicely. There have been some changes in the force, the latest of which is the arrival of Charley Noble from Montreal; also William A. Dempsey and James O'Leary, same place; Mr. Darrah, Providence, R. I.; Mr. Dresser, Rochester, N. Y. and Mr. Stevers, Oswego, N. Y.

There was a report current in some circles on Wednesday last that the Western Union had acquired control of the Postal Telegraph Company. The report is denied by authority of the officers of the latter company. It doesn't seem as if there is very much yet about the Postal Company to control.

A grand annual invitation ball will be given at Irving Hall on Wednesday evening, Nov. 9, by the Telegraphers' Benevolent Association, an organization numbering among its members all the principal linemen, repairers, etc., in this city and vicinity, and of which Mr. Robert Carter is President and Thomas H. Morse, Secretary.

The many friends of Mr. George Cumming will be glad to know that his periphery-contact Morse telegraph key has been awarded the prize of a bronze medal by the jury of the Electrical Exhibition at Paris. The key has been so well received by American operators, that it is gratifying to find the noted electricians composing the jury of the Electrical Exhibition also recognizing its merits in so substantial a manner.

The stockholders of the American District Telegraph Company held their annual meeting on the 18th ult. The directors elected are as follows: T. C. Platt, A. B. Cornell, A. B. Johnson, Chauncey M. Depew, D. N. Crouse, E. W. Andrews, F. B. Wallace, William A. Williams, Theodore A. Roundy. The treasurer's report showed the total receipts to be \$467,948.08; the aggregate expenses and repairs, \$380,207.56; net receipts over expenses, \$82,740.52; surplus, \$117,127.14.

Mr. H. F. Ogden, whose resignation as Manager Met. T. & T. Co.'s 21st office was chronicled in this column last issue, can be found by his friends in the office of the electrical manufactory of Mr. J. H. Longstreet, No. 9 Barclay street. We are glad to add that Mr. Longstreet is just now doing a very large business in telegraph, telephone and electrical instruments and supplies, and his factory is running to its fullest capacity.

The Met. T. & T. Co. have sold their territory and plant outside of Manhattan Island. The portion sold embraces Long Island, New Jersey, and the territory north of Harlem River, including Yonkers, etc. The headquarters of the new company are at present with the Metropolitan Co., corner Liberty and Greenwich streets, New York, but will be removed to Brooklyn about Nov. 1. Mr. L. B. Harris, of Manchester, N. H., has been appointed General Manager. Mr. Harris is also one of the principal stockholders. Mr. F. C. Mason, recently a private line contractor in Brooklyn, has been appointed Manager of Construction, and Mr. J. Powers, of Pittsburgh, Pa., Manager of the central office of Brooklyn and Williamsburgh.

## PERSONAL.

Mr. W. D. Scott, late of North Sydney, C. B., is now working at Canso.

Mr. Elmer A. Cook, of Huntsville, O., was in town last week, and paid THE OPERATOR office a visit.

Mr. J. S. McClelland has resigned his position in the Montreal Telegraph office, Toronto, Ont., and accepted one in this city.

Mr. P. V. Mehen, Manager G. R. & I. city office, Grand Rapids, Mich., and family are spending a few weeks with friends and relatives in Wheeling, W. Va.

Mr. George Roland, formerly press operator in the Houston (Tex.) W. U. office, has resigned, to accept the position of train dispatcher for the I. & G. N. Ry. at Palestine, Texas.

The officers of the Mutual Union Telegraph Company are John O. Evans, President; Geo. H. Holt, Treasurer; Chas. F. Peck, Secretary; Walter Katte, Engineer-in-Chief.

Messrs. E. J. Holden, J. M. Sullivan, J. H. Hutchinson and J. H. Burke have resigned their positions in the Boston, Mass., W. U. office and gone over to the Mutual Union, same city.

Mr. M. G. Bagley has resigned his position as W. U. manager at Rutland, Vt., and gone into partnership in the manufacture of marble mantels and other house-furnishing goods. The firm is Brown and Bagley.

P. W. & B.—At "Ba." we have Mr. C. M. Thompson, an old timer, and Mr. W. B. Curry, days, and Mr. Davis nights. At Canton, F. H. French day man and Johnny Roberts at night. At Bay View Junction (Tower), Phil Brown day and Jack Glenn at night.

Mr. F. C. Lacey has resigned his position with

the W. U. at Topeka, Kan., Oct. 1, to accept one as train dispatcher for the C. H. & H. R. R., at Houston, Tex. Mr. Lacey has the best wishes of a host of friends for his success in his new and more responsible field of labor.

Mr. William Davidson, of the Milwaukee Western Union office, has resigned, and gone to Chicago. Mr. MacDonald, of the same office, is substituting at Madison, Wis., and A. C. Shape has resigned, to accept the managership of the Marquette, Mich., office.

Mr. Charles Howard, the publisher of the *Scientific American*, dropped dead in a drug store at the corner of Broadway and Forty-first street on the night of the 13th ult. The cause of his death is supposed to have been heart disease. Mr. Howard was 31 years of age.

Mr. S. J. Dennis, brother of Mr. J. R. Dennis of the San Francisco W. U. office, was shot near that city, Oct. 16, by the accidental discharge of a Winchester rifle. His face was badly burned, but it is thought that he will recover. He was brought to San Francisco for treatment.

A short and sharp correspondence recently took place in the Milwaukee papers between Chief Operator Shape and an alleged outsider, in regard to the ability of the W. U. operators throughout the Northwest. The outsider seemed to get the best of it, and appeared to have the sympathy of the operators.

Mr. Harry A. Gray, of Arapahoe, Neb., has gone to Florida for his health. On his return he will take a position that has been offered him in the dispatcher's office of the B. & M. R. R., Lincoln, Neb. Mr. Gray is agent for THE OPERATOR, and will, we hope, secure us some new subscriptions during his travels.

Messrs. A. G. and E. B. Saylor, well known and efficient operators, have resigned their positions in the Portland W. U. office, to accept situations with the same company in Philadelphia. The vacancies will be filled by Mr. Charles H. O'Brien, night owl, Augusta, and Mr. Charles Stevens, operator Eastern Railroad, Portland.

Nearly all the telegraphers on the Illinois Central Railroad are both agent and operator. Salaries range from \$30 to \$75 per month. Some of them work from 7 A. M. till 10 P. M., and two hours every Sunday for \$35 or \$40 a month. Independence office pays \$30 per month, and the operator (a lady) furnishes office fuel, lights and message boy. Yet it is a city of 5,000 inhabitants.

Mr. Richard Smith, of the Cincinnati *Gazette*, who now leases a wire of his own from Washington to Cincinnati, was at one time a telegrapher in the latter city, and assisted at what was then thought to be a great telegraphic feat, viz.: Telegraphing the annual message of President Polk, an achievement in wholesale telegraphing which had never before been attempted.

The present force at the Salamanca W. U. office consists of T. W. Potter, Manager; W. F. Melhurs, Chief; J. S. Taggart, Night Chief; G. R. Rigdon, D. Collins, J. Flanagan, G. Leveridge, J. Shields, G. R. Spencer and T. E. Williams. They all say they have as much as they can attend to. Manager Potter, while on his wedding trip recently, lost all his baggage by the sinking of the steamer on which he took passage.

Wm. J. Sipple, a former Erie Railway operator, has been arrested in Jersey City for attempting to rob the Erie Railway Company of \$60,000, by telegraphing, in the name of Treasurer Spencer, to the paymaster to hand the money to a man who should call for it. It was a carefully planned and daringly executed attempt at robbery, but failed through a telegram being delivered to Mr. Spencer and a speedy investigation by that gentleman.

Mr. A. C. Man, manager of the Burlington, Iowa, office, having resigned that position to accept a more lucrative one in Chicago, was relieved Oct. 15 by Mr. J. F. Ludwig, formerly manager of the same office. There are no other changes in the office, with the exception of the addition of Mr. A. L. Nash to the force, and filling the vacancy of night press man, caused by Mr. Keene's promotion to the day force.

ATCHISON, KAN.—Mr. J. Levin is still the efficient manager here. Mr. H. M. Scholls, night report man, has resigned his position to accept a better paying one in Kansas City. His successor



is Mr. Cox, from Texas. Mr. Raymond, besides being a first-class operator, is very well known in musical circles. Mr. Johnston, of Kentucky, works the Kansas City wire. Mr. Reid, who was manager of the G. W. Tel., at Bloomington, Ill., in days of yore, is working here.

At the examination, in Washington, of Captain H. W. Howgate, on the 18th ult., upon the charge of embezzling government funds while in charge of the Signal Service, several officers of the Western Union Telegraph Company were examined, among them D. H. Bates, the general manager, J. B. Van Every, auditor, and R. H. Rochester, treasurer, all of New York. On the 21st ult., the Grand Jury found an indictment against him, charging him with embezzling over \$90,000 from the government.

Mr. Paul W. Bossart, Supt. of the Telephone and Telegraph Co. at Kansas City, and wife, were guests of Mr. Jim Nelson, of St. Louis, during the fair week. Mr. Nelson thinks he has a good joke on Paul. After viewing the Veiled Prophets' procession up town, they came down to Fourth street. Mr. B., becoming weary, sent Paul for a carriage. In half an hour he returned with an immense paper bag, and reported he was unable to get a carriage, but that *he had found some peanuts.*

Mr. C. Dougherty, a veteran telegrapher, who for many years has had charge of the "C. & D." for the Western Union at St. Louis, has been appointed manager of the Mutual Union in that city. The company has secured a very desirable location at No. 207 North Third street, and expects to be ready for business early in November. Mr. W. E. Mulford, late of the W. U. office, St. Louis, and formerly of the American Union, has been appointed manager of the B. & O. office in St. Louis, which is expected to open shortly.

H. A. Lyon is day dispatcher, Mr. J. E. Seyster, formerly agent and operator at Kempton, night dispatcher, and C. J. Croninger, agent Illinois Central Railroad at Pontiac, Ill. A. F. Osborn is agent and operator at Chatsworth; John Brice, at Colfax; W. S. Kettinger, at Kempton; B. Hutchinson, at Cabery; S. R. Crawford, at Buckingham; F. B. Whittum, at Hersher; J. D. Leterneau, at Griswold, and John Kane, at Eylar. Mr. A. J. Esken, manager of the repeating office at Otto, is among the best operators on the line. Business is booming.

HOUSTON, TEX.—Mr. Phil Fall, for many years operator and at one time manager of the W. U. office here, has resigned, to accept a position with the G., H. & H. Ry., city office. Mr. George H. Leach has been appointed day chief, *vice* J. A. McNabb, resigned. Mr. Mike Connolly, our ex-lawyer, and once mayor of a town, is working here now. Mr. George B. Ashley, one of our late arrivals from New Mexico, works the New Orleans quad. Mr. Shaw, formerly press man at St. Louis, is now taking report here. Mr. William Petty, formerly of the G., H. & H. freight depot, is now operator in the general office of the San Antonio Railway.

ILLINOIS CENTRAL R. R.—C. P. Illingsworth has resigned a \$30 position at Epworth, Iowa, for one of night train dispatcher at Oxford Junction, on C. M. & St. P., at \$60. W. T. Kendall has left Winthrop, and H. Martin Masonville, to accept better positions on the D. M. & Ft. D. and C. & N. W. Rys. Their successors are C. H. Dodd and his brother, A. L. Dodd. J. B. Fuller is located at Epworth, and W. G. Bolger at Peosta. M. J. Goodrich goes to New Hartford and M. G. Egloff to Cedar Falls. Mr. Nels Munger still gets trains safely over the road in good shape, and Johnny Norman performs the same duty at night. Mr. Kelsey is at Manchester, Mr. Chesley at Delaware, Mr. Jones at Earlville, Mr. Morley at Dyersville, Mr. Barker at Farley, Mr. Tabor at Raymond, Mr. Smith at Jesup and Mr. Durham at Independence; all good men.

N. Y. D. A. V. & P. R. R., Daisy Moon, chief train runner, Dunkirk, N. Y., is assisted by James Shaughnessey. At Fredonia, W. T. Chapman is in the R. R. office, and W. P. Jobs in the W. U. At Laona we find J. M. Woodcock; at Cassadaga, L. D. Jones; at Sinclairville, E. F. Patterson; at Vermont, S. W. Padlock; at Falconers, James Hughes; at Junction, C. A. Sloon; at Fremsburg, Mike Glaspy; at Fentonville, S. J. Sparks. Then we come into

Pennsylvania. At Russelsburg is C. E. Cobb; at North Warren, Mr. Hapgood; at Warren, C. Mead and Will. Youngs; at Iron-ton, an old timer, Geo. Stillman, an old army operator; at Youngsville, L. McDowell; at Garland, Geo. Woodcock, "M. D."; at Grand Valley, Mr. Klock, and at Titusville, G. M. Lyons.

OMAHA.—Salaries, which have hitherto been small here, have recently been raised to correspond with those paid in Chicago. The work seems to grow heavier every day. On the night of Sept. 29, when the equinoctial storm swept with such fury over this part of the country, we lost Chicago, and about 2,000 messages hung on the overland hooks waiting for a turn in the tide. There are no signs of the Mutual Union here as yet, but we hope to see it enter the town by spring. Leith is here, fresh from Cheyenne. E. Dennison and Warren Tice have turned their faces toward the sunny South, where they will probably pass the winter. Men still come and go; each day brings a fresh arrival or sees one depart, and thus the poetry of motion is seen, felt and appreciated by the management. Huey is still with us. Vacancies have been filled by Messrs. Murphy, Sedgewick and others. Luke Fisher and Perry Chamberlain have decided to stay here all winter.

ST. LOUIS DIVISION, N. C. & ST. L. RY.—This road consists of 170 miles of railroad, and has 15 telegraph stations. Mr. W. P. Sweeney is train dispatcher for both divisions. At Kingston Springs, Mr. W. C. West is agent and operator; C. A. Arnold fills a similar position at White Bluff; Clayton Smith, ditto, at Dickson; J. K. Maret is operator at Gilleon; Robt. Hart, at Waverley; W. H. Johnson, agent and operator at Johnsonville, assisted by Mr. Harrison; J. S. Yarbrough is operator at Camden, Frank Brevard has charge at Hollow Rock, E. B. Teach-out is at Huntingdon, Geo. McKenzie at McKenzie; "Happy" Haynes Ayres (a distant relative of the great "Patsey") is at Dresden. At Martin we have J. I. Wilkes, agent and operator, with Mr. Parham as assistant. Mr. John Boyers is agent and operator at Paducah Junction, W. J. Hall manipulates at Union City, and J. C. Hellner is operator at Hickman, Ky., the end of the line. Mr. Archy Mack, the assistant train dispatcher is a late arrival, and is very popular. D. B. S.

Referring to the complaint made by O. M. Chesney, of Topeka, Kan., in THE OPERATOR of Oct. 1, in reference to his ill-treatment by Mr. H. C. Brown, of the Texas & Pacific Railway, Wild Bill Wagner writes to say that if Mr. Chesney had stuck to railroading long enough he would have eventually got a good position. "I started railroading," says Mr. Wagner, "four years ago, and have had a pretty rough time, but I chose to stand it and make my way. Operators from the North expect to come and get the best positions immediately, and when they find they have to work for a reputation they are very apt to exaggerate statements. As to Mr. Chesney's pay, he received double time for his work, and was not beaten out of a cent. Our officials are gentlemen and good business men. Mr. Brown has only been here a short time, and has proven himself a very competent gentleman, and is well liked. I make this statement in justice to Mr. Brown. He has nothing whatever to do with me, or I with him, only I know the facts above to be true."

OIL CITY (PA.) NOTES.—Several changes worthy of notice will occur in this office on or about Nov. 1, several of our best men leaving for different parts of the country. Mr. Klumph will probably go south; Sam McKee to Pittsburgh; Ed. Keene and Plum Brigham—the team who have worked the Bradford quad, for a number of years—to New York, where they go into the main office. This Bradford wire has been a very heavy one for a long time. On one occasion, several weeks ago, during a spurt in the oil market, 1,870 messages were exchanged between 10 A. M. and 4 P. M. (change hours). Keene and Brigham rank with the strictly first-class men of the country. Their work in every respect is excellent. Mr. Keene worked in New York five or six years ago. It is rumored that two old Oil Region boys, George Farwell and Bob Shannon, now of New York, are to fill vacancies in the O. C. office. Messrs. William Hunter, of Wheeling, John Hagan and C. E. Johnson are new

acquisitions. Colonel Drake, formerly manager Oil City office, is now at Pittsburgh with the W. U. SAMUELS.

WASHINGTON TERRITORY.—Mr. Ed. Bowden is the gentlemanly manipulator at Walla Walla for the W. U. Mr. J. H. Woollard is operator at the depot for the O. R. & N. Co. Mr. J. F. McElroy, formerly of California (weight 217 lbs.), is night man at Walla Walla. Mr. H. G. Stim-mel, lately from Kansas, is now agent at Waitsburg. Mr. Greenwood handles the W. U. and O. R. & N. Co.'s business at Dayton. Mr. Radcliffe is operator at Bolles Junction, Mr. Ed. Waring at the end of track. Mr. O. H. Joy is agent at Whitman, ably assisted by Mr. Fish as operator. Mr. J. Rogers is agent and operator at Fouchet; Mr. Charlie Erwin, "the genial," at Wallula Junction; Billy Teague and Mr. Lamb at Umatilla. Mr. Halleck, late of Portland, is now operator at Cayote. Mr. Davis, late of S. F., has charge of Willows station. Mr. F. P. Arbuckle, who comes from Kansas, is agent and operator at Alkali. Mr. J. H. Martin at Blalocks and Mr. John Cooper at Grants. Mr. J. V. Sutton is acting agent at Celilo. Mr. W. O. Gore is our efficient dispatcher, and has his office at The Dalles, where he is ably supported by Messrs. Parker and Don, alias J. Don-ley, formerly of S. F. office. J.

A correspondent at Cheyenne, Wyo., who commences his communication by saying: "THE OPERATOR, with its familiar pages overflowing with matter of interest to those connected with the telegraphic fraternity, finds its way safely here, but, as we depend a great deal upon it for the workings of 'the inner world,' it seems to reach us a little too seldom," appears to have fallen quite in love with the far West and the U. P. Ry. He says that before going West he had often wondered why complaints from that section were so few. After, however, mingling with "the boys" a little, listening to their musical Morse and learning their salaries, he says he doesn't wonder they are satisfied. "The lowest salary that the U. P. pays for day work is \$65 a month," he goes on, "and the salaries of night men have been increased to \$50. Paying enough to command good men, the U. P. employs no other. If dispatchers and train masters in localities where cheap labor is at a premium could listen to the Waltham movement of every department dependent upon the telegraph here, they could not help realizing the advantages of employing good men, paying them a fair remuneration. Many old timers will remember an operator whom the world knows as Bogardus. He is here, as ready as ever to relate wonderful tales. He is not in good health, but he's fretful and preevish, and seems to be drifting away toward the sunset of life."

## BORN.

GLENN.—Oct. 23, to Mr. J. A. Glenn, operator, Bay View Junction, Md., P., W. & B. R. R., a son.

SMITH.—Oct. 7, to Mr. S. H. (Bert.) Smith, W. U. Tel. Co., Halifax, a daughter.

## MARRIED.

WHITEMAN—STAUFFER.—October 15th, at Nappanee, Ind., by Rev. Tom C. Neal, Mr. C. H. Whiteman, agent and operator, Nappanee, to Miss Florence Stauffer.

HURLBURT—HACKETT.—On October 12th, at the Methodist church, North Sydney, C. B., by the Rev. J. B. Giles, Mr. C. W. Hurlburt, W. U. Cable Staff, North Sydney, to Mary M., third daughter of Mr. William Hackett.

JANKE—DEPUY.—October 11th, at St. Paul's Protestant Episcopal church, by Rev. J. F. Garrison, D.D., Charles A. Janke to Emilie Hooper, daughter of Mr. J. Stewart DePuy, all of Camden, N. J.

## DIED.

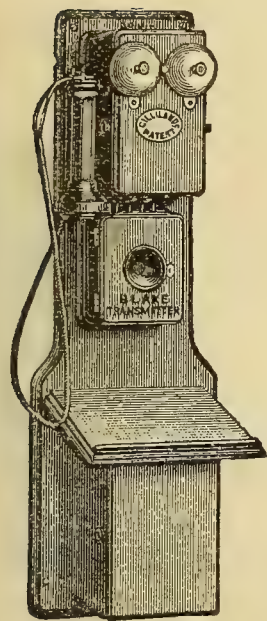
BRENNER.—September 30th, Mary Catharine, eldest daughter of Wm. F. Brenner, agent and operator, Alexandria & Fredericksburg R. R., Woodbridge, Va., aged 11 years.

CONNORS.—Oct. 21, at Toronto, Ont., after a brief illness, John J. Connors, of the Montreal Telegraph Co., aged 21 years.



# GILLILAND ELECTRIC MANUFACTURING CO.,

E. T. GILLILAND, General Manager, INDIANAPOLIS, Ind.

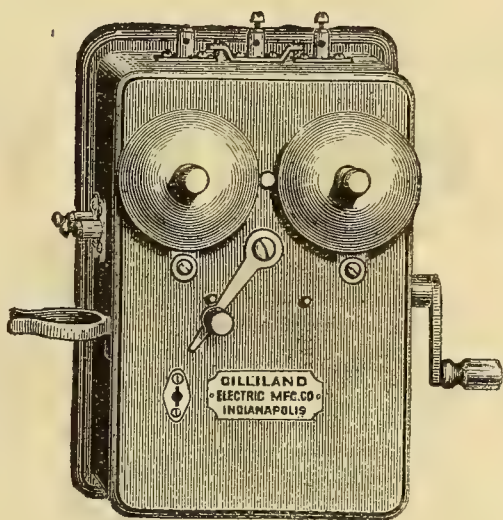


**STANDARD  
Magneto Bell.**

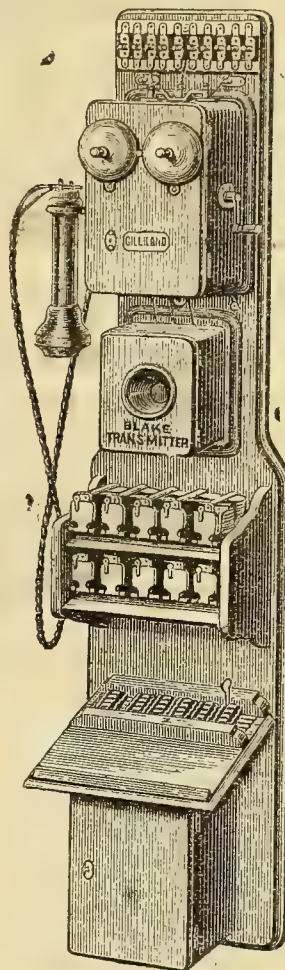
40,000 now in use.

This Secrecy Switch has many advantages over the old style. It can be attached to any or all of our Magneto Bells by a change in the connections and the addition of the Indicator, for in their construction this change was provided for. In all the Secrecy Switches heretofore made, it was necessary to turn the switch every time it was used, but with this latest improved, the Gravity Switch is employed. The Indicator controls the talking, and when set for the Exchange, no further attention is required until desired to talk in the opposite direction. When the Telephone is hung up, the line is restored for the use of others upon the same circuit, the Indicator simply governing the talking.

Additional to the superiorities it possesses as a Secrecy Switch, it has an excellent feature in that all of our Bells can be converted from a Gravity to a Secrecy Switch, or vice versa, and provide for the possibilities of the Individual Bell in the future.



**SECRECY SWITCH.  
STANDARD MAGNETO.**



TEN-LINE COMBINATION SWITCH BOARD.

## 10-LINE and 20-LINE SWITCH BOARDS,

For the club system of small towns and villages.

INVALUABLE FOR

State and County Institutions, Hospitals, Factories, Depots, Offices, Stores, etc.

Being complete, compact and handsome

our COMBINATION SWITCH BOARDS are universally used; the demand is extraordinary and continuous, giving satisfaction in every particular.

## 50, 100-Line & Upward SWITCH BOARDS

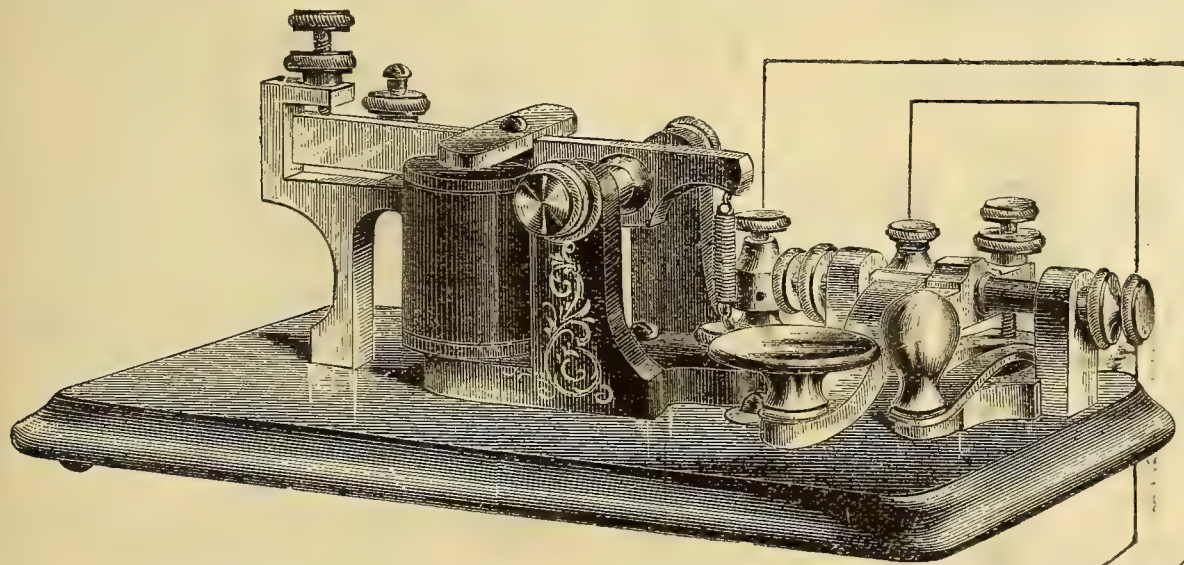
FOR EXCHANGES.

Over 1,200 of our Switch Boards in use in this country and in Europe.

## SUPPLIES OF ALL KINDS.

SEND FOR CATALOGUE AND PRICES.

# THE "MORSE" LEARNERS' INSTRUMENT.



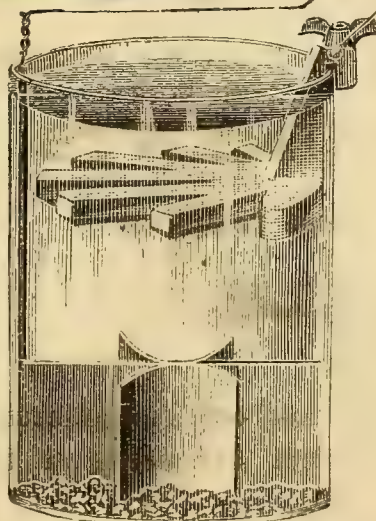
## THE BEST.

Price, \$4.50, complete with Battery, Book of Instruction, Wire, Chemicals, and all necessary materials for operating.  
"Morse" instrument alone, without battery..... \$3.87  
"Morse" instrument, without battery, and wound with fine wire for lines of one to fifteen miles..... 4.50  
Cell of battery, complete..... 65  
"Morse" Learners' Instrument, without battery, sent by mail..... 4.30  
(Battery cannot be sent by mail.)

GOODS SENT C. O. D. TO ALL POINTS IF ONE-THIRD OF THE AMOUNT OF THE BILL IS SENT WITH THE ORDER.

REMIT BY DRAFT, POSTAL MONEY ORDER, OR REGISTERED LETTER.

Favorable Arrangements Made With Agents Everywhere.



## THE "MORSE"

Is a full-size, well-made, complete MORSE TELEGRAPH apparatus of the latest and best form for learners, including handsome Giant Sounder and Curved Key, and a large Cell of the best Gravity Battery, latest form.

It is the best working set of Learners' Instruments for short or long lines, from a few feet up to 20 miles in length.

## YET OFFERED!

You are SURE of Getting  
THE BEST THAT IS MADE

IF YOU SELECT THE "MORSE."

We will in every case refund any remittance made us for these goods, if they are not found to be Entirely Satisfactory.

J. H. BUNNELL & CO., 112 LIBERTY ST., NEW YORK.



## THE WONDER OF THE AGE.

Piano or Organ  
playing learned in  
ONE DAY!



### MASON'S CHART.

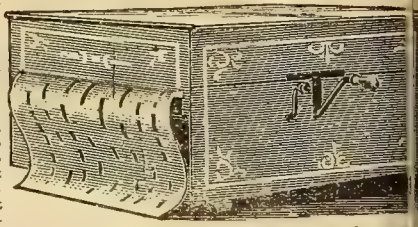
A child 10 years old can understand it perfectly.

This most wonderful invention has been before the public (in its perfected form) but a short time and the sales have been immense, which is the surest test of its unparalleled merit; and orders are received from every country on the globe. It is a new theory, and a decided departure from the old method. **Mason's Chart** fits over the keys of a Piano or Organ, indicating exactly where and how the hands are to be placed, and the proper keys to strike, changing its position and arrangement to suit the key in which the piece is written that you wish to play. They are perfectly infallible in their results. If you can read you can play the Piano or Organ in one day better than some teachers could teach you in three months. If you have no Piano you can learn at some friend's house, and astonish all with your knowledge. **DEXTER SMITH**, the editor of the *Leading Musical Paper in the world*, says: "They should find a place in every house, whether there is a Piano or Organ or not. They are to *Musicians* what the *Multiplication Table* is to *Arithmetic*. It gives decided satisfaction in every case. It cannot do otherwise than *save as it does, a hundred times its cost*, and in its great simplicity lies its unequalled success. **MUSIC TEACHERS THEMSELVES UNHESITATINGLY ENDORSE IT.** The price is one dollar for a complete set (4 forms) and includes payment of postage by us. \$7 per doz. to Agents, or the trade by express. Special offer, to every purchaser of **MASON CHARTS** who will state in what paper they saw the advertisement, and will agree to show the Charts to their friends who will give as a **FREE PRESENT** our Music Album with 47 CHOICE PIECES OF MUSIC WITH COMPLETE WORDS AND MUSIC. Those wishing the Album sent by mail pre-paid will enclose 15 cts. extra, otherwise send by express. Price of Album without the Chart 75 cts. No one will regret learning to play the Piano or Organ, it is the greatest of all accomplishments. Address **Spaulding & Co., 57 WASHINGTON ST., BOSTON, MASS., Agents.**

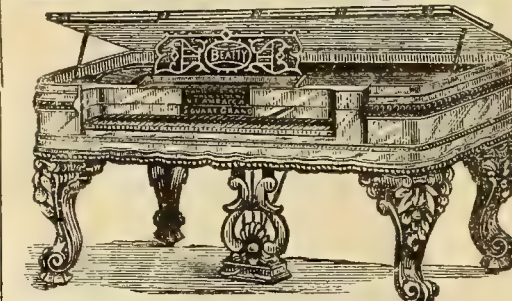


## \$5. The Wonderful Mechanical Piano-ette.

The most marvellous mechanical invention of the age. It will play any tune in a melodious and pleasing manner. Difficult and simple music produced in a masterly style, and it can be played by a child as well as by a grown person and will furnish music for social gatherings of any description, playing hour after hour, without any knowledge of music being required in the operation. The most wonderful of all musical inventions; a machine which in a purely mechanical manner produces any kind of music, Waltzes, Polkas, Marches, &c., &c., without any practice or knowledge of music whatever; in this respect far superior to any music-box, for there is no limit whatever to the number of tunes it will play. The perforations in a flexible strip produce the effect. It has just been perfected (the accompanying cut showing it in its improved form), and is having the largest sale ever obtained by a musical instrument in the country. It has fine black walnut cases, highly decorated, the notes or bars (the music producers) are metal, on same principle as a tuning fork, which produce clear and most melodious notes, and never get out of tune; the bars are by strikers, the same as the wires are in a piano, only they work automatically instead of by the fingers. The strip of prepared which the tune is stamped or perforated, is about 10 inches wide, and as it passes through the rollers and over the keys, the spring through the perforations in the paper and strike the right note; this is all done automatically, without any assistance of operator (except turning the rollers), and the tune is played perfectly. It would be one of the most appropriate presents to one, especially where there is no other musical instrument. Its execution is admirable, and its capacity or capability almost limited. It is selling faster than any musical instrument ever invented. The music is fine, and everybody delighted. The price Piano-ettes only \$5, including a selection of popular tunes. Address, **The MASSACHUSETTS ORGAN** 57 Washington St., Boston, Mass., U. S. A., Sole Manufacturers.



## BEATTY ORGANS & PIANOS.

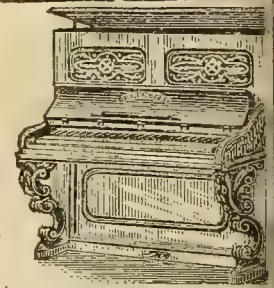


### BEATTY'S PIANOS.

GRAND SQUARE and Upright \$125 to \$1600.

### BEATTY'S ORGANS.

Church, Chapel, and Parlor, \$30 to \$1000, 2 to 32 stops. "BEATTY'S BEST" Parlor Organ. Price only \$107.75. CHAPEL ORGANS, \$97.75. The LONDON 18 Stops, 5 sets Reeds, only \$65. THE PARIS, \$85. BEETHOVEN New Style, No. 9,000, 27 Stops, 14 Octaves, Golden Tongue Reeds, only \$90.



DRAWING-ROOM UPRIGHT PIANO Length 4 1/2 ft. Height 4 ft. 2. Dep. New Style, 1919. 7 Octave wood Case. New Scale, Grand. All improvements. Price, \$175. With Stool, Cover and Book.

Length 7 ft. width, 3 ft. 6 in. Wt. 1000 lbs. Grand Square Piano, Pride of the Parlor. Style 2025. 7 1/2 Octaves, all Round Corners, 3 Unisons, Overstrung Bass, Magnificent Rosewood Case. All improvements to be found in any Square Piano. Price \$297.50 with Stool, Book and Music, ONLY \$297.50

Write For Full Particulars. Many Desirable New Styles Now Ready. If you cannot visit me be sure to send for Latest Catalogue before Buying Elsewhere. Free Coach with attendant meets all Visitors always welcome.

WRITE FOR HOLIDAY CATALOGUE, ELABORATELY ILLUSTRATED. Address or call upon **DANIEL F. BEATTY, Washington, New Jersey.**

## \$7.50 THE OLIVER SHOT GUN & RIFLE \$7.50



Wonder and Admiration of THE SPORTING WORLD. The Handsomest and most complete Sporting Gun ever offered to the public, at any price.

By a simple and ingenious invention it is so constructed that it can be loaded with ball and shot cartridges at the same time. In placing this new Shot Gun and Rifle combined on the market, at a price far below that of other first-class Fire-Arms, we give the RETAIL PURCHASER the benefit of every possible reduction. The price we offer the Patent 5-SHOT Breech-Loading Rifle and Shot Gun at barely covers the cost of manufacture, but it will ensure a sale in every town in the United States, the result of which would take years of advertising to accomplish. The offer of the PATENT 5-SHOT BREECH-LOADING SHOT-GUN and RIFLE at our present low prices, holds good only for a limited time, and is for the purpose of introduction solely, in fact, if all our contracts for material and work had not been placed months ago, before the great rise in metals and labor, we could not make these FIRE-ARMS at the present cost. The PATENT SHOT GUN and RIFLE are WARRANTED and GUARANTEED to be thoroughly made and of as fine material as any Fire-Arm in the world! Every part is made by special and expensive machinery, in large lots. Fire-Arms, like Sewing Machines and Pianos have always paid an enormous profit to the manufacturer, the actual cost being but a small part of the selling price. The Patent Combination Breech-Loading Shot-Gun and Rifle will never be sold at the immense profit asked by the makers of other fire-arms, but only for the purpose of introduction will it be sold at the present price. We know this to be in the end the most effective and cheapest way to introduce a meritorious article. FIRES FIVE TIMES with one Loading and is very ACCURATE and EFFECTIVE at both Short and Long Distances. It can be loaded with either ball or shot cartridges in less than a half minute, and every shot discharged in six seconds if necessary. The barrel is manufactured from the best material and tested in the most careful manner, all the trimmings are Nickel Plated handsomely designed, Rocky Mountain Muzzle Sight, and the best of Steel Locks. This marvelous invention as a Breech Loading Shot Gun, has been pronounced equal to the best imported English Guns that are selling at \$100 each, and as a RIFLE it is warranted perfect. It is only by manufacturing these Patent Combination SHOT-GUNS and RIFLES in very large quantities that we are enabled to supply such an Excellent and perfect Fire-Arm for such an extraordinary low price! All other Breech-Loading and Repeating Rifles without the Shot Gun, retail from \$15.00 to \$50.00. We will send the PATENT 5-SHOT BREECH-LOADING SHOT-GUN and RIFLE COMBINED, with Cleaning Tools, for \$7.50, carefully boxed. If desired we will send Rifles C. O. D. on receipt of \$3.00 to insure us against loss of Express charges. When full amount of cash is sent with order, we will send cartridges free. Send money by Registered Letter or Post Office Money Order.

**WHAT CUSTOMERS SAY.**  
Find enclosed Draft for \$24.00 for three more Rifles. If they prove as good as the one I have I can sell a hundred. Oct. 7th, 1881. W. Z. Seawell, Neilville, Ark.  
Hundreds of Similar Testimonials.  
**Order at once. WORLD MANUF'G CO., 122 Nassau Street, New York.**

Rifle at hand. I enclose \$25.00 for three more balance in cartridges. Oct. 7th. A. S. Twitchell, Post Master, Gorham, N. H.

The Rifle proved highly satisfactory. Enclose \$15 for two more Guns. Sept. 21st. C. C. Foutch, Probate Judge, Gladwin Mich.

## HAVE YOU RECEIVED ONE OF J. H. BUNNELL & CO.'S New (November, 1881) ILLUSTRATED CATALOGUES?

If not, send your address by postal card or letter and you will get one by next mail.

IT CONTAINS Illustrations, Descriptions and the **BOTTOM PRICES** of all things Telegraphic, including all of the very latest and best designs of

## TELEGRAPH INSTRUMENTS

of every description, together with all Telegraph and Telephone

## LINE MATERIALS,

Tools and Supplies.

We are thoroughly practical in every department, and our manufactures and selections will be found fully suitable to meet all needs of the most improved

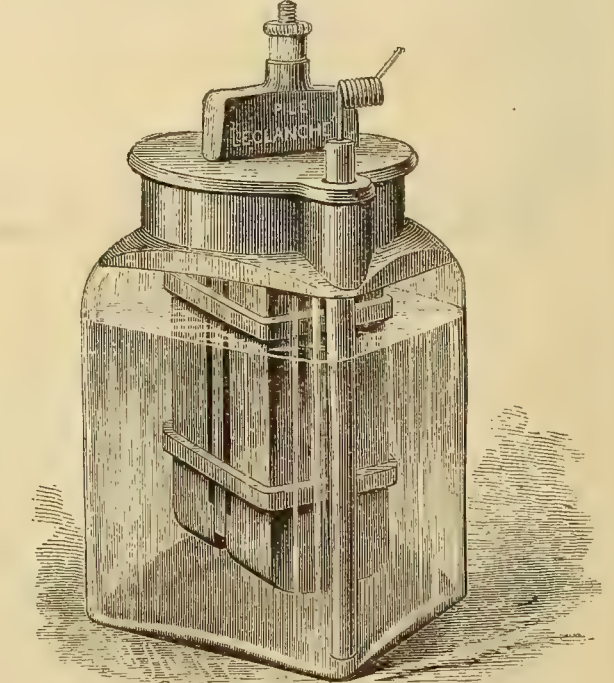
## MODERN TELEGRAPH SERVICE.

## J. H. BUNNELL & CO.,

112 Liberty Street, New York.

## Leclanche Battery.

(PATENTED.)



"Prism Battery" Complete.

—THE—

## GREAT TELEPHONE BATTERY.

The Realization of

**SIMPLICITY AND EFFICIENCY**

## In Electric Open Circuit Batteries.

Free from acid. Emits no odor. Does not get out of order. Lasts without renewal from six months to several years, according to use.

**ADOPTED AND USED BY THE** American Bell Telephone Company. Metropolitan Telephone and Telegraph Company. Western Union Telegraph Company. Gold and Stock Telegraph Company, with their battery telephones. And by all the Telephone Companies and Exchanges in the United States.

The attention of the public is called to the new form of Leclanche Battery, in which the porous cell is dispensed with and for it substituted a pair of compressed Placques or Prisms, which are simply strapped to the Carbon (as shown in cut).

The Prism Battery is more easily and cheaply cleaned and renewed than any other battery. Beware of

**Infringements and Worthless Imitations.**

Every genuine Leclanche Battery has the words **Pile-Leclanche** stamped on the carbon head, jar and prisms. All others are spurious.

"Prism" and Porous Cell Batteries for sale in any quantity. Zinc and Sal Ammoniac of superior quality.

## The Leclanche Battery Co.,

40 West 18th St., New York.



# 1860. A MARVEL OF INGENUITY! A MODEL OF PERFECTION!! 1881. THE ACME PRINTING PRESS AND COMPLETE OUTFIT.

Delivered free anywhere in the United States on receipt of \$2.00.

In introducing our new Holiday Printing Press for 1881, we unhesitatingly proclaim the ACME PRESS the most perfect LITTLE WONDER ever yet brought before the public under the name of a Printing Press. We have been engaged in the manufacture of Printing Presses since 1860, and we will forfeit our 21 years' reputation if we do not prove that the work done on the ACME PRESS is equal in every respect to the same done by an experienced printer upon any high-priced printing press. DESCRIPTION—The Press is made entirely of Malleable Iron, japanned in black with Gold Stripes, ornamented in red and blue. The Type Chase is also of ornamented metal, silver-plated and surmounted by a polished maple wood Handle. The Press is mounted on a Solid Black Walnut Stand, to which it is firmly riveted, and upon which is also arranged an ingeniously constructed Inking Disc, by which device the Press is rendered absolutely SELF-INKING in its operation. ONE THOUSAND IMPRESSIONS PER HOUR can easily be made after a little practice. THE OUTFIT accompanying each Press consists of 1 Font of Fancy Card Type (this is a full regular font of ornamented card text type); 1 Box Fine Black Card Ink; 1 Lye Brush; 1 Adjustable Inking Disc; 1 Kid Centre Impression Pad; 1 Type Case with a separate compartment for each letter. The whole put up in a neat Wooden Cabinet with Drawer. Full illustrated directions how to set type; how to print, &c., accompany each press. Every Press Warranted. REMEMBER—We box and ship the Press and outfit, as above described, free of expense, on receipt of \$2.00. In ordering, it is best to send (Post Office Money Order or Registered Letter. Give your Post Office address, and state nearest Express office. Address ACME MFG CO. 53 Ann St., New York. Printing Press Manufacturers, Type Founders, Dealers in Printers' Materials, Chromo Goods and Cards of all kinds.)

## THE 'LONG DISTANCE' PATENT ELECTRIC CALL BELL.

"No Limit to the Distance it can be Operated."

OUR NEW PATENT CALL BELL is constructed on entirely novel principles, and has points of merit not possessed by any other electric or magneto bell. It is the perfection of convenience; requires a minimum of electric force, gives instantaneous assurance to the sender that his call has been properly made at the opposite end of the line, and the construction is such that a break in the line is IMMEDIATELY INDICATED AT BOTH ENDS BY THE AUTOMATIC OPERATION OF THE BELL.

We are now ready to supply the above call to Telephone Companies, Exchanges, Private Lines, or to any one wanting a CHEAP, DURABLE AND THOROUGHLY EFFICIENT ELECTRIC BELL.

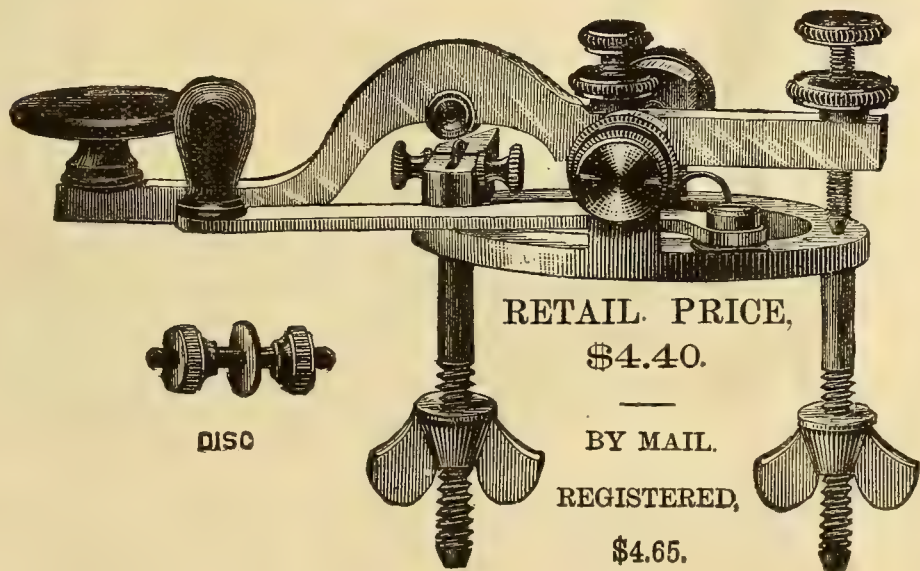
Address,

THE LONG DISTANCE ELECTRIC CALL COMPANY  
257 and 259 Water Street, BROOKLYN, N. Y.,  
WHERE THE BELLS CAN BE SEEN IN OPERATION.

This Key has just been awarded the first prize at the Paris Electrical Exposition, Oct. 20, 1881.

## The Cumming Periphery-Contact Telegraph Key.

NO JAR OR STICKING POINTS.



CLOSE NEEDLE-POINT CONTACT.

RETAIL PRICE,  
\$4.40.

BY MAIL,  
REGISTERED,  
\$4.65.

(PATENT APPLIED FOR.)

The device consists in the placing of two wheels or discs swinging one upon the other, at right angles; one disc inside the arch of the lever and the other crosswise in the insulated standard. The electrical contact is attained on the rims or tires of these platina discs, instead of by the two wire points in general use for telegraph keys. These said discs are capable of a thousand surfaces by adjustment. The wheels are firmly held in place by small set screws working on the axles of the same. Advantages—The least possible contact surface which produces perfect electrical connection; circular surface of the rim; adjustability of the electrodes; no lateral motion; close contact and no jar.

This key has had unusual tests during the past five months, and has come out of the trial victorious. Every operator who has handled the Cumming Key testifies to the truth of these claims, and also as to its capability of giving the fastest transmission under the strongest battery without sticking. It is the most economical key any company can use for, saving time and avoiding mistakes. It contains many keys in one by having so many possible points of contact on each wheel easily adjusted. Upwards of 200 autographic testimonials by experts and operators, placing its merits at the highest, are offered for inspection by the inventor, GEORGE CUMMING, 303 East 19th street, New York.

Sample Key Sent Post-paid on Receipt of Price.

L. G. TILLOTSON & Co., General Agents,  
No. 5 and 7 Dey Street, New York.

J. H. LONGSTREET,  
No. 9 Barclay Street,  
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MANUFACTURER AND DEALER IN

TELEGRAPH INSTRUMENTS,  
TELEPHONE AND TELEGRAPH SUPPLIES  
OF EVERY DESCRIPTION,  
ANNUNCIATORS AND BURGLAR ALARM  
APPARATUS, BATTERIES AND  
BATTERY MATERIAL.

Telegraph Instruments for Railroad  
Use a Specialty.  
Sixty-Page Illustrated Catalogue Mailed Free.

THE  
JOHN A. ROEBLING'S SONS CO.,  
TRENTON, N. J.

And No. 117 Liberty st., New York,  
Manufacturers of

GALVANIZED TELEGRAPH WIRE  
OF ALL QUALITIES.

No. 6 Wire in 1/4-mile bundles, 550 pounds per mile.  
No. 7 Wire in 1/4-mile bundles, 470 pounds per mile.  
No. 8 Wire in 1/4-mile bundles, 388 pounds per mile.  
No. 9 Wire in 1/4-mile bundles, 330 pounds per mile.  
No. 10 Wire in 1/4-mile bundles, 268 pounds per mile.  
No. 11 Wire in 1/4-mile bundles, 216 pounds per mile.  
No. 12 Wire in 1/4-mile bundles, 168 pounds per mile.  
No. 14 Wire in 1-mile bundles, 98 pounds per mile.

This Wire possesses the highest electrical conductivity, which is necessary to make Telegraph and Telephone Lines work with certainty and ease.  
Special attention given to

Telephone Wire,  
for which No. 12 is the average size used.

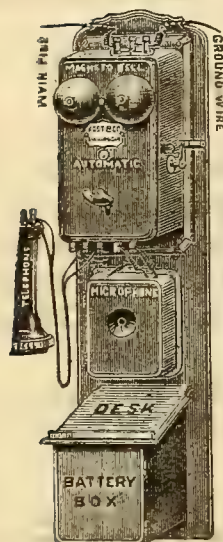


# Post & Company,

## CINCINNATI, OHIO.

Telegraph and Telephone Department.

**POST & COMPANY,**  
CINCINNATI, OHIO.



LICENSED MANUFACTURERS OF

American Bell Telephone Co.'s

MAGNETO & ELECTRO CALL BELLS, ETC

Manufacturers of all kinds of Telephone Instruments, Bells, Plugs, Switch Boards, Annunciator Drops, Spring Jacks, Magneto-Engines for Switch Tables, and dealers in all kinds of Telephone Supplies and Tools; in stock and for sale at lowest prices.

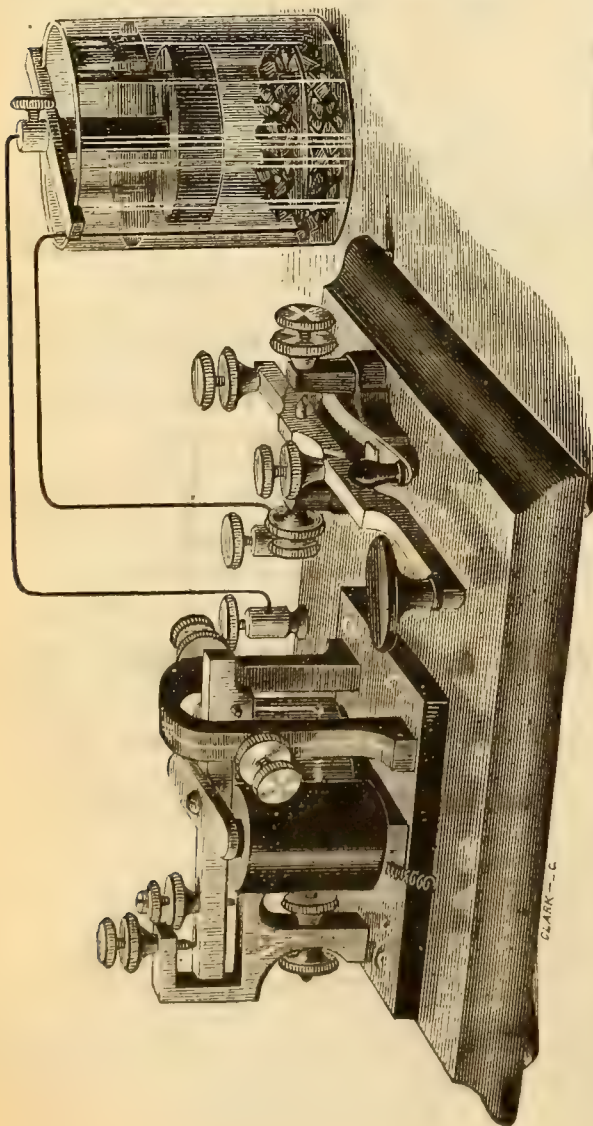
Galvanized Line Wire, all numbers; Insulated Wire, all numbers; Insulators and Brackets, all sizes; Batteries, all kinds and sizes, at lowest prices.

FULL ASSORTMENT OF

Telegraph Instruments.

Agents and Managers of Exchanges are requested to correspond with us before purchasing.  
We call special attention to our new improved Magneto Call Bells. Samples sent on application to agents and exchanges.

**POST & CO., Cincinnati, O.**

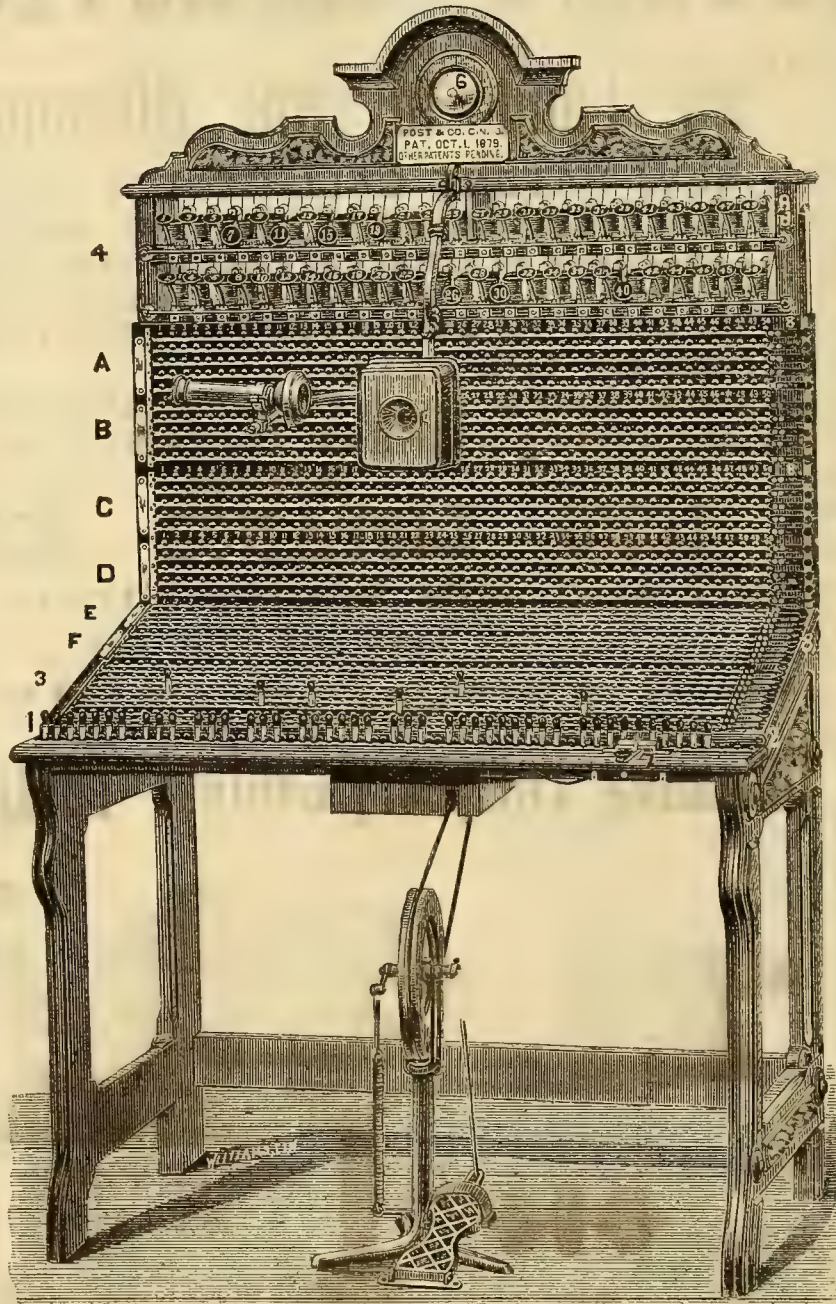


**POST & CO.'S IMPROVED HOME LEARNER,**

With Brass Key and Sounder, Rubber-Covered Coils,

Battery, Book of Instruction, Etc. Price, Complete, - - \$5.00.

## MANNER OF SETTING UP AND OPERATING Post & Co.'s "Improved Switch Board."



Please examine thoroughly. This Board has been perfected at great expense, and after thorough trial as to its practical working, the contact points (rubbing) are so made as to clean themselves by each connection—a very important point. The Board is simple and substantial, NO CORDS TO BREAK, nothing to get out of order; it can be run by a Child, and the connections made as quick or quicker than by any other table.

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A call comes in and drop No. 4 will fall, showing party desiring to talk. You answer by taking out plug No. 1 on his line and insert in second strip on board No. 2. Then move treadle, which answers subscriber by a ring. After answering, push the large button No. 7, on the lower right-hand corner, when you are thrown in circuit with microphone and telephone. After answering and asking what is wanted, take the same plug, No. 1, that you first used and insert in any of the ten strips, No. 3, that is not in use. Call up the party that is called for in the same manner above described.

TRUNK LINES, A, B, C, D, E and F. Tables having trunk lines are operated in the same manner as described, with this exception: that when parties are wanted on any other tables connect in strips marked A to F on any table desired. Can make connections for any number of additional tables of five lines each.

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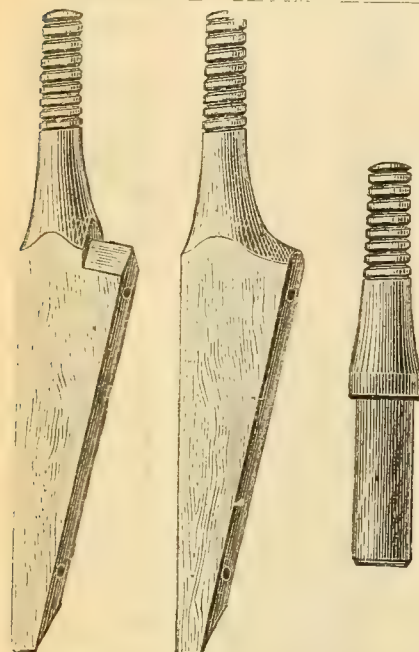
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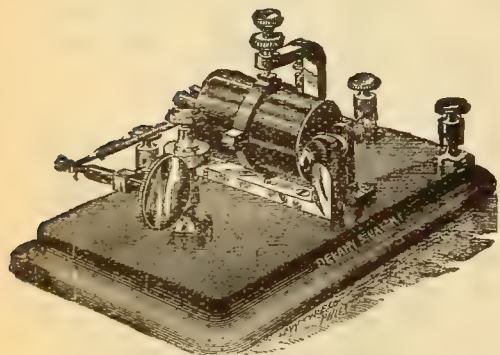
DETROIT, - - - - MICH.



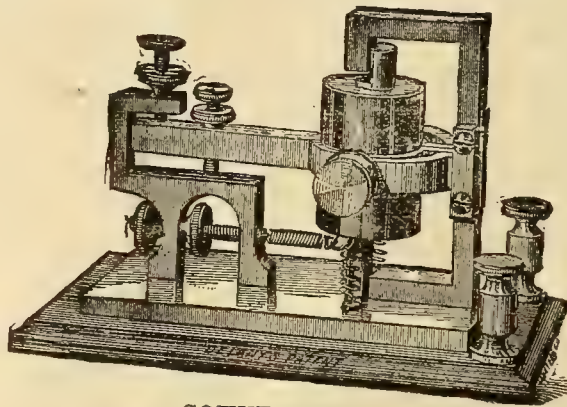
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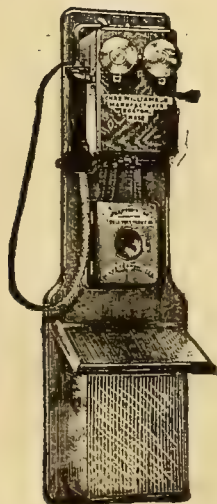
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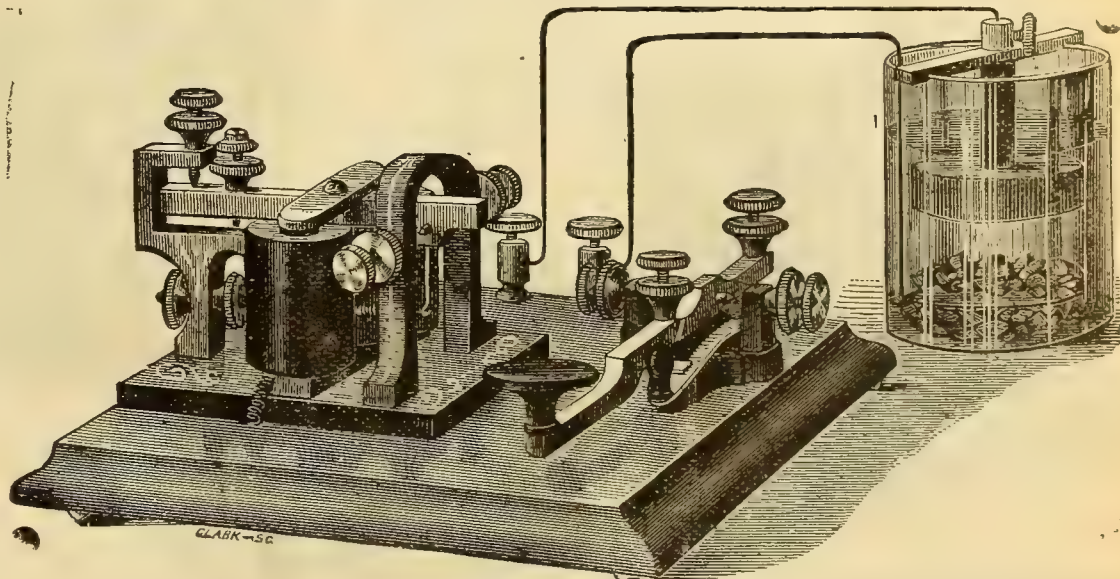
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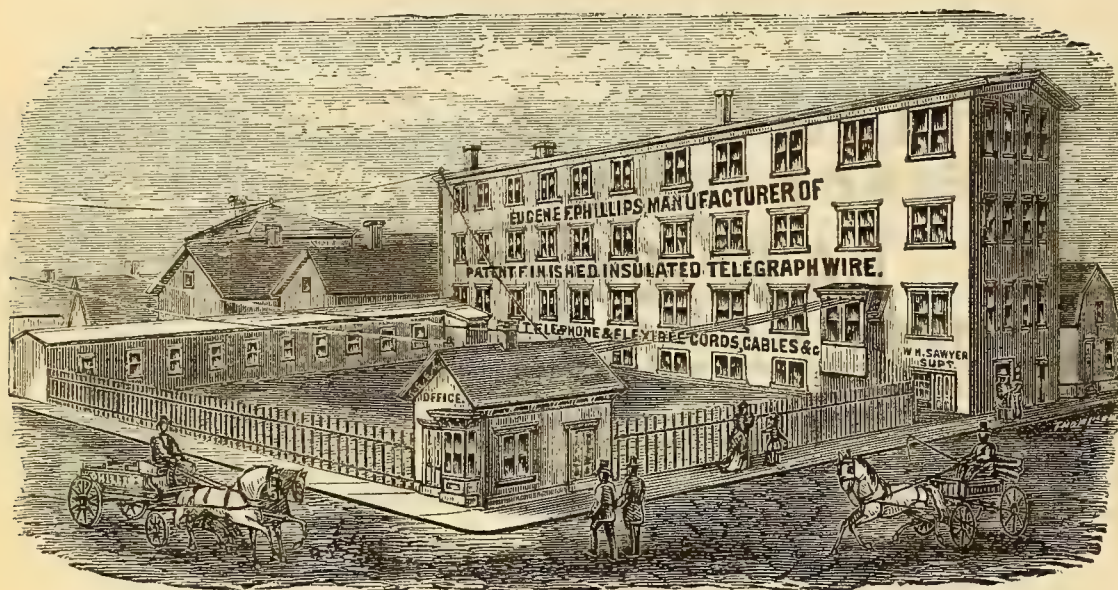
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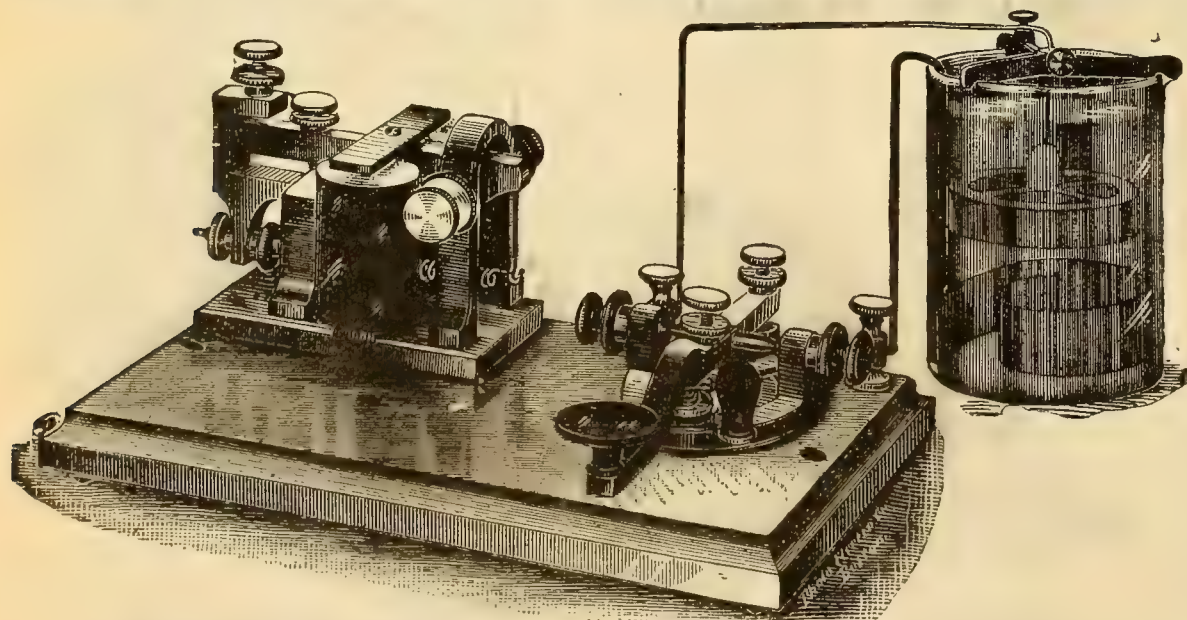
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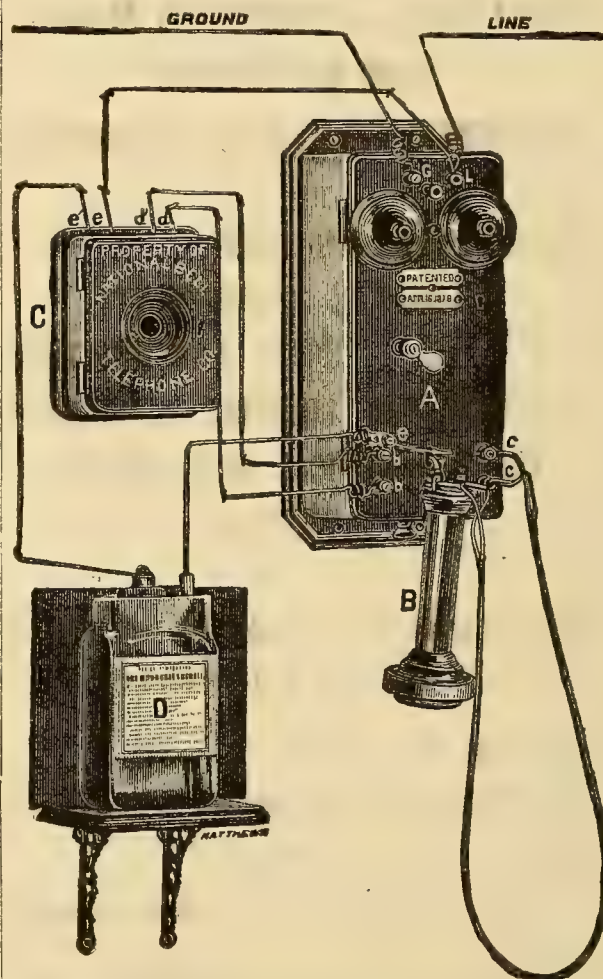
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in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

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This Company will arrange for telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

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All persons using Telephones, not licensed by this Company, are hereby respectfully notified that they are liable to prosecution, and for damages for infringement, and will be prosecuted accordingly to the full extent of the law.



# THE OPERATOR

is published semi-monthly—on the 1st and 15th of each month. It is devoted to telegraphic news, commercial, railroad and telephonic branches, social as well as scientific; it is a record of the wonderful growth and progress of the telegraph and telephone, and a faithful chronicler of all the changes and improvements in electrical science.

## WHAT SUBSCRIBERS GET.

THE OPERATOR in the course of a year furnishes its readers with 24 numbers, each containing an average of 20 pages of interesting reading matter, being 480 pages, or 1,440 columns during the year. This is equal in one year to at least 2,500 PAGES OF AN ORDINARY BOOK. In addition to being kept fully informed on every matter of interest to them occurring at home or abroad, subscribers, by saving their copies, can readily turn to dates and events with which it might be desirable at any time to refresh their memories. More or less complete files, bound or unbound, are always salable, and generally bring many times their original cost.

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THE OPERATOR has been enlarged and improved until it is now eight times as large as (and certainly of at least eight times more value and general interest than) it was when first started. Yet the price to-day is actually LESS than it was then. In fact, the paper is now furnished to subscribers at a price that DOES NOT COVER THE BARE COST OF PRODUCTION, our object being to secure a large circulation, and trust to advertising for our profits.

## THE GROWTH OF "THE OPERATOR."

Any one who will take the trouble to compare the little four-page OPERATOR of seven years ago with the twenty-four page, cosmopolitan journal of to-day, will see the vast improvement. The paper was then managed by two working operators in the intervals between more serious undertakings. It now occupies the undivided attention of several business men and a large editorial corps, and circulates in every quarter of the globe, wherever the telegraph is worked. We are still anxious to make THE OPERATOR as efficient as the unstinted expenditure of money and the exercise of diligence and discrimination, with the aid of every modern appliance, can make it; and we hope that those who have found instruction or pleasure in its columns in the past will repay us for our efforts by giving us their co-operation in our endeavor to place a copy in every telegraph office and telephone exchange in the United States and Canada. The greater its circulation the stronger will be its influence, and a journal devoted to the interests of the toiling operator can never be too strong.

## A STALWART, UNCOMPROMISING JOURNAL.

THE OPERATOR is a stalwart, uncompromising telegraphic journal. Its cardinal principles are honesty of purpose, integrity in business affairs, courage, independence, genius and industry, and its chief aims are to elevate the profession, to popularize electrical science, and to cement the fraternity in one compact body, thus rendering it proof against assault from all quarters. THE OPERATOR has already become known as the sturdy friend of the widow and orphan, the unfortunate and oppressed, wherever found.

## AN AVERAGE OF 61 COLUMNS OF MATTER PER ISSUE.

Acting upon these principles, and in order to accord the widest range to every subject, THE OPERATOR has, from the first of January last until the present issue, Nov. 1, ten and a half months, published

## 428 PAGES OF SOLID, SUBSTANTIAL READING MATTER,

being an average of 20½ pages, or 61 columns for each issue. Every issue has been teeming with news, scientific essays and the social gossip of the profession, including the airiest fancies and the gravest facts, but all worthy of the culture and great intellectual power now so marked in our profession.

## CAREFULLY AND CONSCIENTIOUSLY EDITED.

THE OPERATOR is carefully edited in every department by a large and well-chosen editorial staff, which includes some of the finest telegraphic statisticians, astute thinkers and philosophers in this most remarkable business. We regard it as our peculiar province to find out at any cost what is going on telegraphically; to make it public in a truthful and lucid manner; to expose shams and frauds of all kinds, high or low; to give praise where praise is due, irrespective of prejudice, and to do some courageous and vigorous thinking thereon. As every item is, as far as possible, tested and proved before being printed, we find our editorials largely quoted, both at home and abroad, as authority upon all telegraphic subjects. Under the title of "editorial" we might also, perhaps, class a subject which is now attracting wide attention for its conciseness, truthfulness and sweeping scope, viz.: The

## "REVIEW OF THE PAST TWO WEEKS,"

covering all telegraphic events of importance, and the doings and sayings of those who are written and read about.

## A FAITHFUL RECORD OF CURRENT EVENTS.

THE OPERATOR also aims to be a complete record of the births, marriages, deaths, appointments, promotions, transfers, resignations and all the social gossip of the profession, refraining, however, from all that might be injurious or offensive to innocent or well-meaning persons. It maintains

## INTELLIGENT AND LIVELY SPECIAL CORRESPONDENTS

at all important telegraph and telephone centres; on the frontier, in Europe and the Pacific Archipelago; and it uses the telegraph freely for news of events transpiring a short time before going to press.

## CONDENSED PRACTICAL SCIENTIFIC INFORMATION.

While not aiming to be severely scientific, THE OPERATOR's "Scientific Column" contains a carefully prepared epitome of all current thought and experiment in electrical matters, as communicated to us by our leading scientists, or culled from the scientific journals of America and Europe. Foremost in this department are the excellent

## "NOTES AND QUERIES" OF MR. T. D. LOCKWOOD,

which have won a well-deserved place in the record of electrical science. These articles, plainly written, form one of the most efficient helpers for a young man desirous of studying the science.

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Just think of this: If you had a friend who proposed to send you twice a month a long letter, containing all the news and other information mentioned above, and such other matters connected with your business as it was to your interest to know, and if he agreed to do this for ONE DOLLAR A YEAR—less than sufficient to pay for writing paper and postage—and you knew that he was perfectly responsible and would do as he promised, don't you think it would be rather short-sighted on your part not to accept his proposition? Yet that is precisely what THE OPERATOR offers to do, and is doing, although it spends THOUSANDS OF DOLLARS A YEAR in carrying out the contracts.

## WHY EVERY OPERATOR SHOULD READ "THE OPERATOR."

It is controlled by no company or faction, and aims solely to serve the best interests of the telephone and telegraph employees. The average newspaper, propitiated with liberal orders for advertising, never dares to give the true state of affairs with regard to the working operator; indeed, it may truthfully be said that the American telegrapher never had a journal say one word in his behalf, and never had any influence or weight in telegraphic affairs until he commenced to do his own printing. All the traditions, all the history, and even the very existence of THE OPERATOR depend upon the great rule of allowing

THE LOWEST OPERATOR AN EQUAL CHANCE WITH THE HIGHEST OFFICIAL to "speak his piece," and to spread his suggestions and grievances before his superior officers or fellow-workers. In fact, all the thoughts, all the aspirations, and all the hopes of the profession were utterly lost until THE OPERATOR caught them up, bound them into sheaves and preserved them by "the art preservative of all arts" for all time.

As an organ of opinion, THE OPERATOR is

## FIRST, LAST AND ALL THE TIME FOR OPERATORS AND THEIR BEST INTERESTS.

Telegraphic and kindred topics are recorded and discussed as they arise, while its record in defending the widows and orphans of unfortunate telegraphers requires no comment. While it is a well-known, staunch supporter of the members of our craft, it is, at the same time, never to be blinded to their faults, if any are found to exist; and, believing it is better to touch and heal, to cast out and chastise those who are unworthy of confidence, it points them out,

## NO MATTER WHAT POSITION THEY MAY OCCUPY.

While aiming to expose, and so to correct, all that is deceptive, unjust or corrupt in official life, we do not regard it as productive of good results to the profession at large to give these unpleasant matters undue prominence before an effective effort is made privately to correct them.

But, to the toiling operator, clerk and lineman THE OPERATOR should need no word of indorsement; for, as the accredited organ of the profession, it has advanced so far in prosperity as to be

## ABSOLUTELY INDEPENDENT OF ALL OFFICIAL INFLUENCE,

as well as cliques and factions of all kinds. THE OPERATOR has never yet hesitated to face any emergency, no matter from what quarter it came. The position we take on any question is the one which seems to us to be for the best interests of the profession and of the fraternity, and any threat or pressure tending to make us swerve from

## THE TRUE PATH OF CONSCIENTIOUS DUTY AND PROFESSIONAL ETIQUETTE

can have no possible effect in changing our course.

There are also other reasons why THE OPERATOR justifies the generous support which it now receives. The wonderful fecundity of our inventors, whose discoveries are following rapidly one after the other, and the great number of gigantic enterprises already projected, present

## A WIDE AND PROMISING FIELD FOR THE AMBITIOUS

and promising young man. Now, it stands to reason that the operator who does not read his class paper must soon become a kind of telegraphic Robinson Crusoe. He must necessarily remain

## IGNORANT OF THE PROGRESS OF TELEGRAPHIC EVENTS,

and it is certain that no one who is badly informed on this subject can ever hope to raise himself above the level of the ordinary ruts of daily life. Therefore, no operator who expects to

## PROFIT BY THESE ENTERPRISES,

or even to secure for himself a better-paying situation in the thousand and one changes which these new plans, schemes and ever-changing combinations produce,

## CAN AFFORD TO MISS "THE OPERATOR" FOR A SINGLE ISSUE,

since he cannot in any other way be made acquainted with his general prospects; and the odd number which he misses may be the very one which would otherwise have given him the hint that led on to fame and fortune.

## THE NATIONAL PORTRAIT GALLERY AND OTHER ILLUSTRATIONS.

This year, so far, THE OPERATOR has published pictures of Gen. Eckert, Messrs. Bates and Doren—the trio that made the American Union famous—Theodore N. Vail, General Manager of the American Bell Telephone Co., all full-page illustrations; Operators Albert S. ("Patsey") Ayres, of Cincinnati; William D. West, of New Orleans; P. J. McMahon ("Paddy Mack"), of Boston; John C. Sherer, of California, and John Lenhart, the Citizen of the World. Besides these, the present volume has produced some splendid illustrations, with full description, of the Chicago Police and Patrol system, and other matters of current news.

## REVIEWS AND ESSAYS

of great interest and intrinsic value appear in each issue, while the occasional humorous articles of "Werner" are too well known to need commendation.

THE REVIEW OF THE YEAR 1880, published in our issue for January 1, 1881, is alone worth a year's subscription to the studious telegrapher.

## CONTENTS OF ONE VOLUME.

The back numbers for the current year also contain an exhaustive review of the Consolidation of the Western Union and American Union Companies, and the ensuing lawsuits; the effort of the Postal Telegraph advocates; full and dazzling accounts of the Paris Electrical Exhibition and the Congress of Electricians at the same place (THE OPERATOR having had a special correspondent in the Palais de l'Industrie during the whole of the Exhibition); gradual progress of the telegraph and telephone; valuable statistics and important and most interesting comparative statements; financial reports; railroad telegraphs; salaries paid; fast sending—time made and number of words sent in a given time; new companies formed; biographies and obituaries of noted men and women; the electric light; new inventions; telegraphic and telephonic conventions, telegraphic journalism; the telephone, in all its phases; ocean cables; remarkable anniversaries, and the progress of the telegraph in England, the continent of Europe, India, Australia, South America and all other places abroad.

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All this reaches you regularly, just as a faithful correspondent would write you a long letter by mail twice a month, and costs you only four cents a letter! In providing for this slight expense, there are many small outlays which could be abolished to counterbalance the cost. You might dispense with the daily papers, and you might even get along without your local paper, but you ought not to think of being without the journal of your own profession—the operators' organ—the only paper in the world published in the interests of the fraternity of which you are a member. The price,

## ONE DOLLAR FOR A WHOLE YEAR,

is nothing compared with the benefit you will receive from a perusal of THE OPERATOR during the next twelve months.

## WHY ALL WIDE-AWAKE OFFICIALS SHOULD READ "THE OPERATOR."

No official organ of any particular company can ever be of use in guiding the wide-awake official. It is admitted that nothing in the newspaper world could have less influence than an "official organ," since its recognized position and common fame put it in the light of piping always to the same creaking key; and its reports being always colored are consequently utterly valueless as matters of record. THE OPERATOR, on the other hand, looking merely at its independent position, must be an admirable corrective instrument, for the better class on both sides study its reports, and all admit that it is the fairest field for friendly controversy, exhortation, explanation and good-natured criticism regarding all that pertains to the interest of telegraphers. It is, as has been well said of the press in general, like an eruption of Vesuvius—a sort of safety-valve by which ideas and feelings which, if they remained imprisoned, would result in earthquake, are released, ejecting with them a good deal of mere steam, a great quantity of ashes, and a certain amount of lava, which, by its crumbling ultimately covers the soil with smiling vineyards and benefits to mankind.

These facts are gradually becoming understood among officials, and the journal which, in a manly, straightforward way, tells them when they are wrong commands their respect. THE OPERATOR is the

## ONLY COMPLETE INDEX OF AMERICAN TELEGRAPHIC LIFE,

a continued story of our thoughts and actions as a body, without a knowledge of which any one is unfit for successful telegraph leadership.

## WHY ALL TELEPHONE MEN SHOULD READ "THE OPERATOR."

The progress of the telephone has been such, and so many of our very best men have gone over to that branch of our profession, that it demands especial attention at our hands. We have, therefore, commenced a new department of this paper, devoted exclusively to the telephone, its rise and progress, and every-day gossip in connection therewith. We receive regularly items of this kind from the various telephone exchanges throughout the country



Indeed, the Telephone Department of THE OPERATOR jumped at once into popular favor, and is now eagerly read by the members of that important and fast-growing branch of telegraphy. In the present volume are to be found complete accounts of the famous litigation between the English government and the telephone people; the telephone conventions, with much interesting data, and a record of long-distance telephoning. The lucid and elaborate papers of Mr. T. D. Lockwood, discussing practical telephonic subjects in popular language, are so well known and are so deservedly popular among telephone men as to need no comment here.

#### WHY EVERYBODY SHOULD READ THE OPERATOR.

A profession like ours, growing daily, hourly, and with its various branches in the telephone companies, the railroads and Signal Service, the working members of all of which are unsurpassed in activity, ingenuity and the importance and effectiveness of their work, should support a FIRST-CLASS, THOROUGH-GOING, INDEPENDENT PAPER, to be spread broadcast over the civilized world.

SCIENTIFIC MEN AND STUDENTS SHOULD READ "THE OPERATOR," because it is a complete, connected and well edited record of electrical progress. Avoiding the redundant fulness and dry details of scientific research, it is careful to preserve the important facts in all that it is necessary for the scientific student to know. Ever since the introduction of the telegraph, men have been writing voluminously upon electrical subjects, but their efforts have been rather too deep for the ordinary student. Our articles are, therefore, written with a special desire to avoid that great stumbling block to the acquisition of electrical knowledge; to disentangle the multiplicity of knotty questions and to

PRESENT THEM STRAIGHT AND SMOOTH TO OUR READERS, thus affording the junior members of our profession an opportunity of mastering, in an easy way, the most intricate questions.

#### A WORD FOR OUR ADVERTISERS.

The support so generously given to THE OPERATOR has enabled us to print, each issue, many extra copies for circulation abroad, in addition to our regular edition, until the paper is now mailed regularly to all parts of every State and Territory on this continent, and to every country abroad, wherever the English language is read. The reduction of our subscription price to ONE DOLLAR A YEAR, together with the attractive make-up of the paper, and the fearless, enterprising and reliable attitude which it assumes, have made it a great favorite, and promise to induce

EVERY TELEGRAPH AND TELEPHONE MAN IN THE UNITED STATES AND CANADA to become a subscriber; in fact, the paper is more than keeping pace with the existing development of the telegraph.

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#### A VALUABLE FIELD FOR ADVERTISERS,

and, in connection with the reasonable rates which we afford them—for, notwithstanding that OUR CIRCULATION HAS MORE THAN DOUBLED DURING THE PAST YEAR, our advertising rates have not been increased—it forms the very best means of spreading their wares before the world.

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d, France, Germany, Australia, etc.—the price, postage prepaid, is only \$1.25 per annum. To countries not in the U. P. U., the subscription is \$1.50.

We much prefer yearly subscriptions, and they are more satisfactory to subscribers themselves, but to those who desire to subscribe for a shorter period we will mail the paper, postage prepaid, for nine months, for 75 cents; six months for 50 cents, or three months for 30 cents.

Should any difficulty arise in procuring copies, direct communication with the publisher is requested. Specimen copies, singly or for getting up clubs, mailed free on application to the publisher. In case subscribers should at any time fail to receive their copies of the paper regularly and promptly, they have only to notify us, when the matter will be immediately investigated and remedied.

Should you change your residence at any time—no matter how often—you have only to notify us and the paper will be sent to your new address. We prepay all postage, too, so that you have no further expense of any kind, except the subscription price, and you are under no obligation to take the paper for a longer period than that for which you pay. If the subscription be not renewed when it shall expire, the paper (as is our invariable custom) will promptly be stopped.

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Many would doubtless like to send for THE OPERATOR who are deterred by the supposed great trouble and risk of sending money by mail. The fact is, however, that there is very

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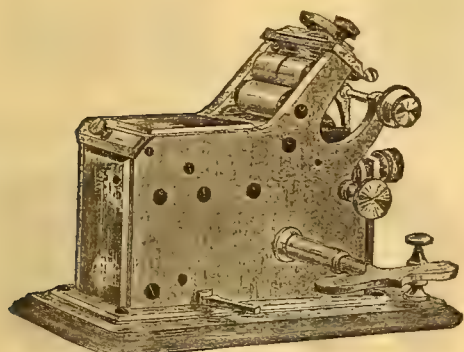
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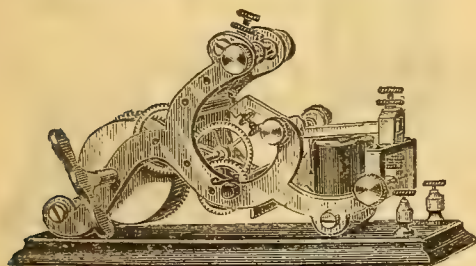
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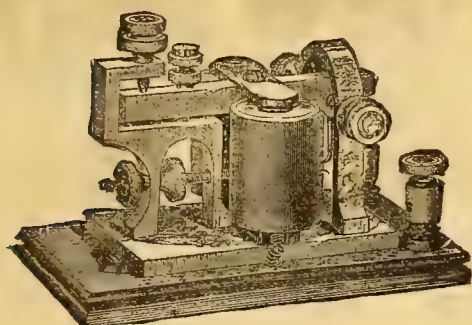
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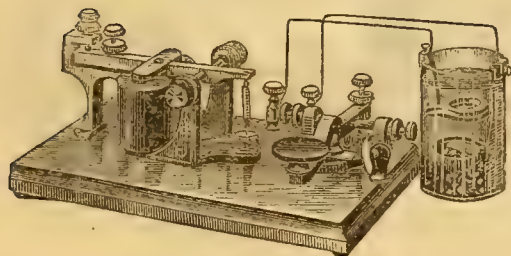
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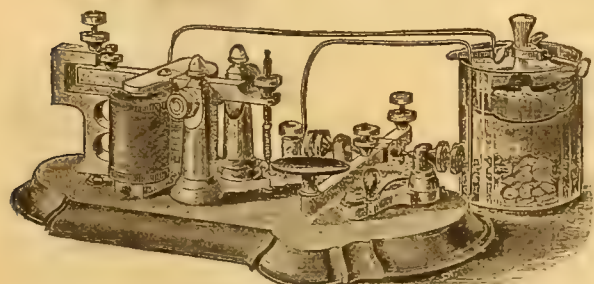
No. 1 Register, \$38.



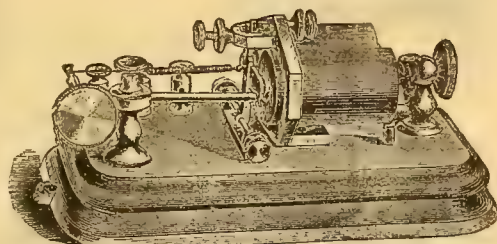
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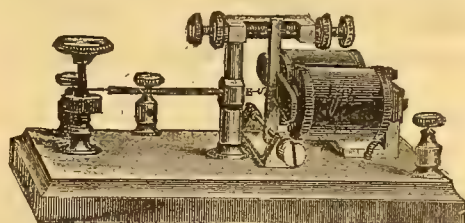
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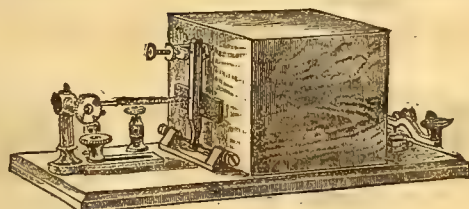
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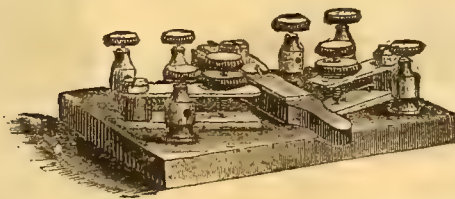
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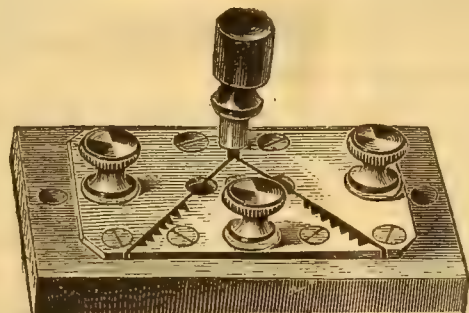
Pony Relay, \$5.



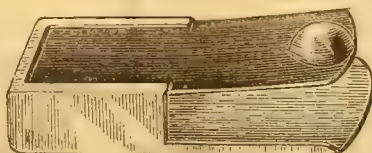
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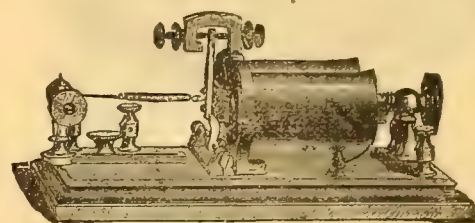
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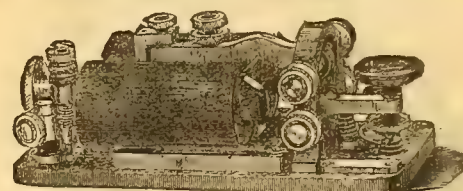
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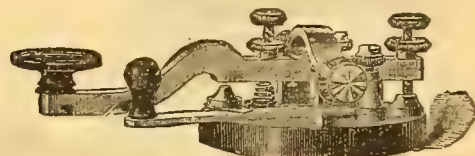
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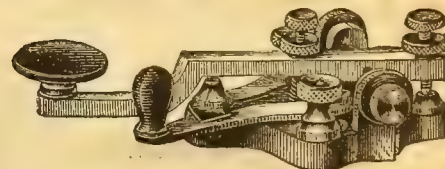
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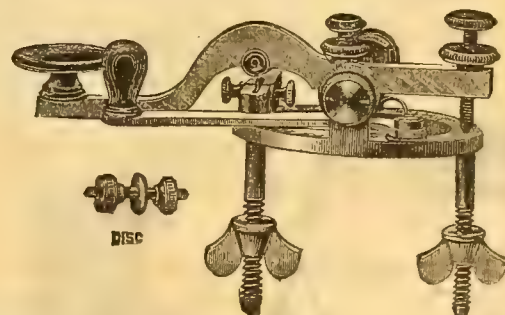
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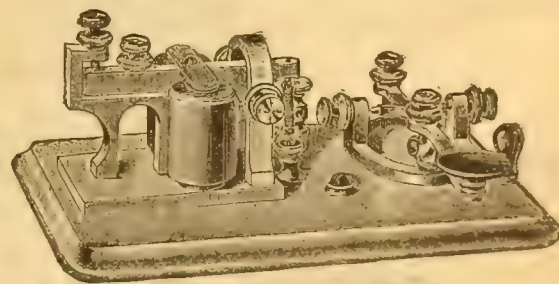
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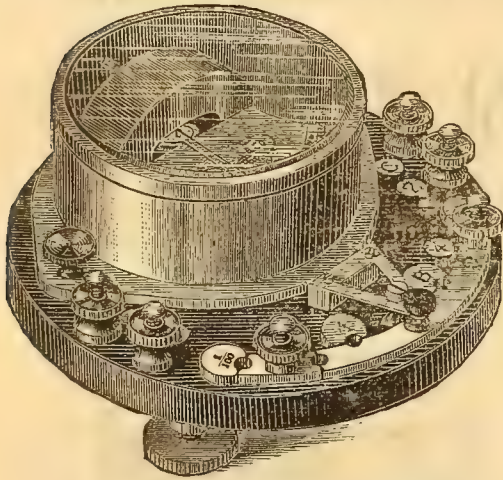
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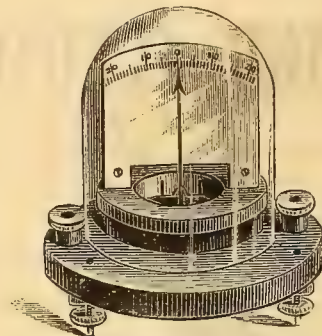


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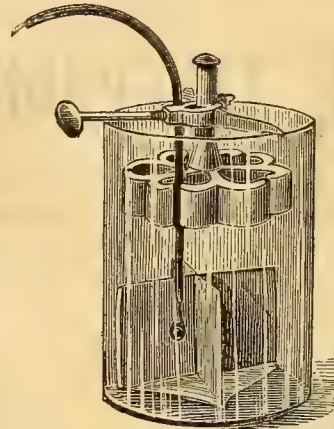
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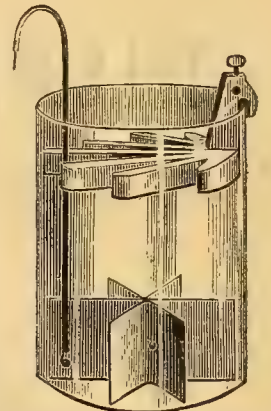
Double Shunt Differential Galvanometer, for Electrical Measurement.



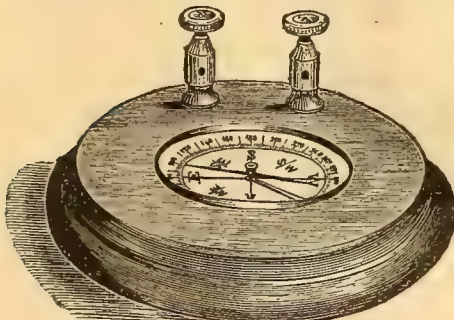
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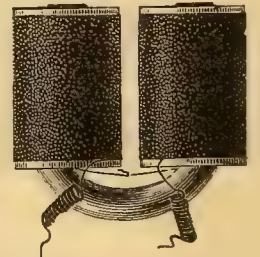
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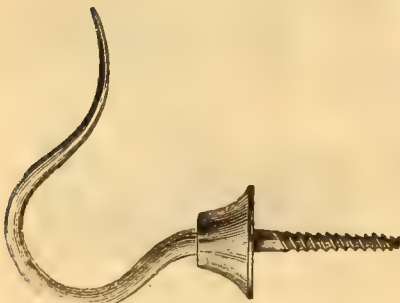
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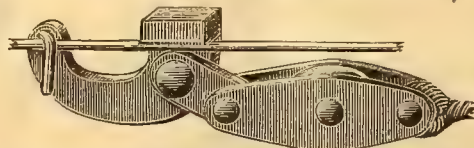
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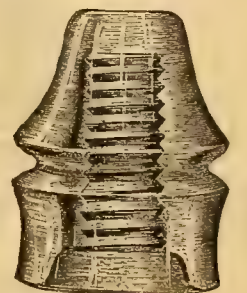
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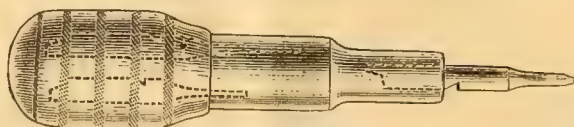
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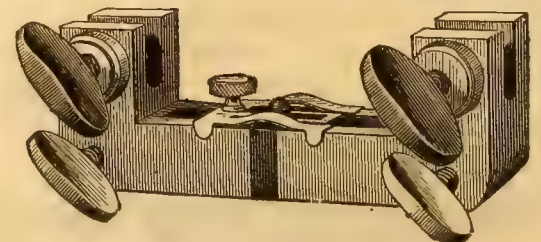
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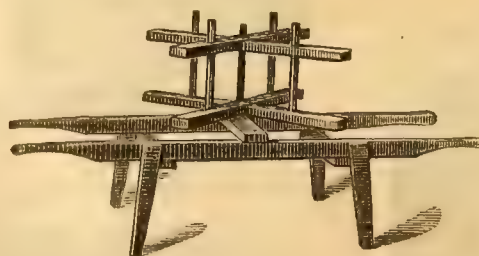
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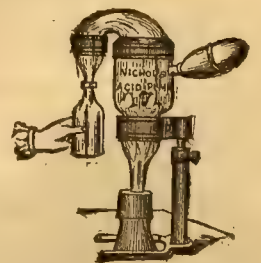
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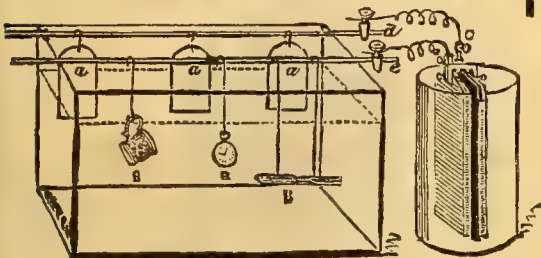
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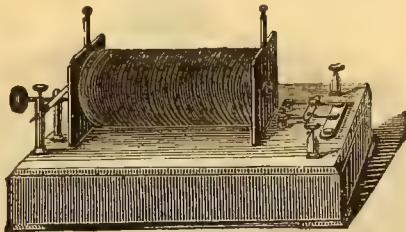


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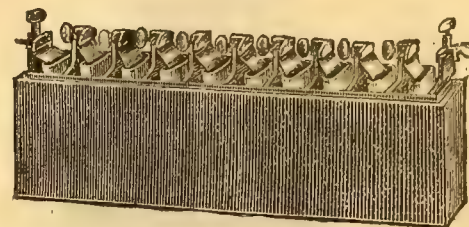
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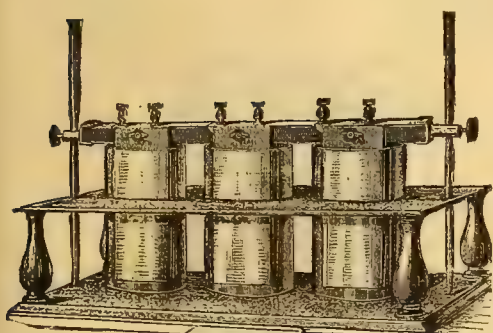
Electro Plating Apparatus.



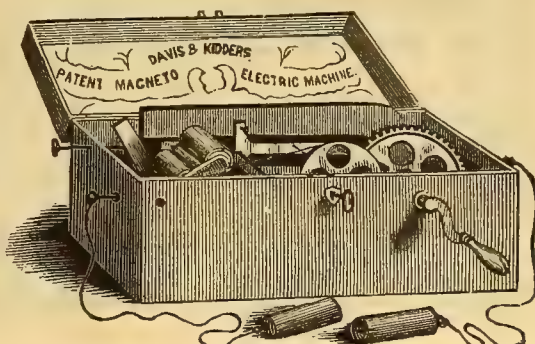
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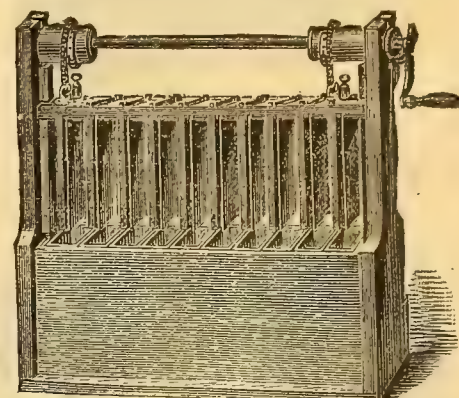
Tyndall's Rubber-Cell Grove Battery. In Troughs containing 10 Cells, with Platinums 2x5 inches, \$35.00



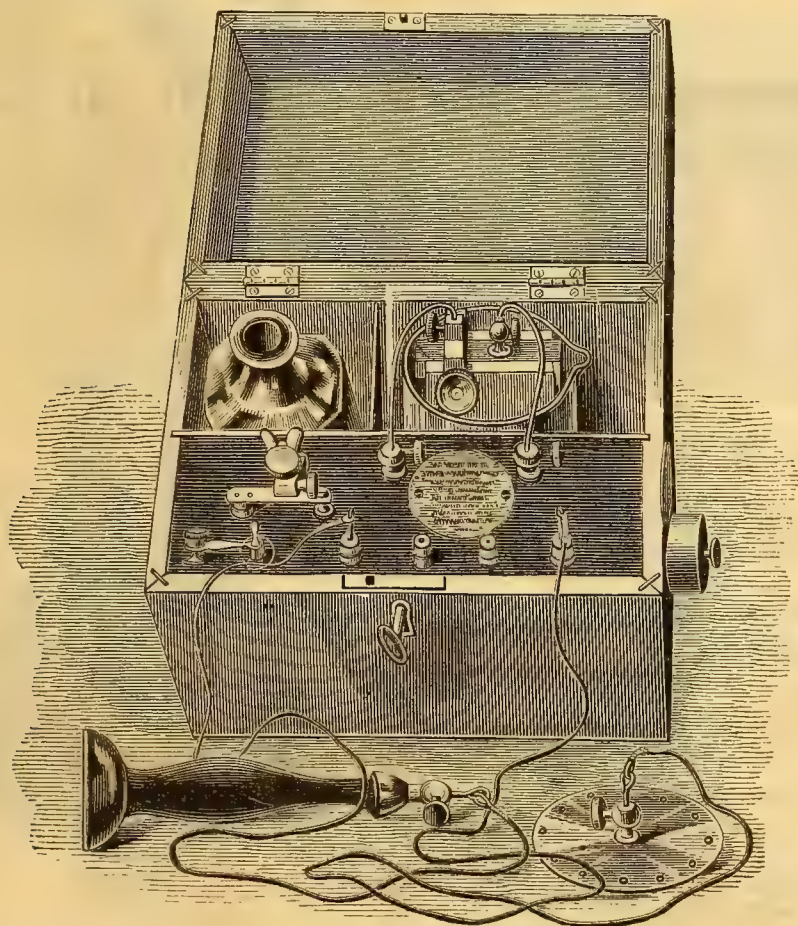
Three-Cell Smee Silver-Plating Battery. With Stand, arranged so that plates can be raised from the solution when not in use, \$10.00.



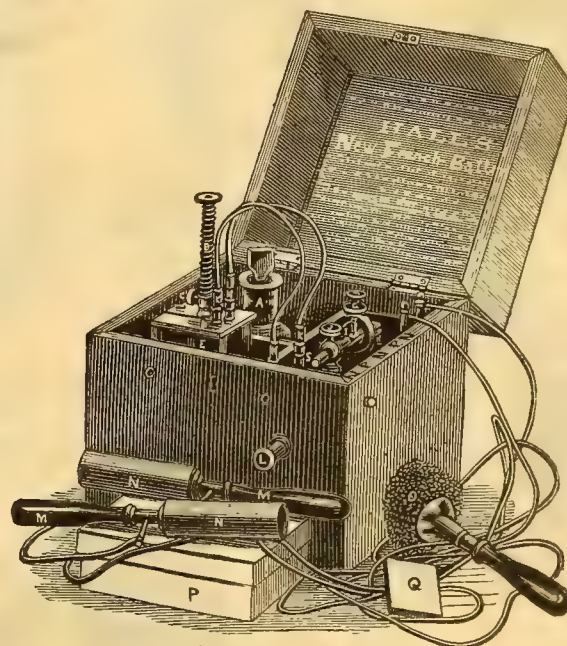
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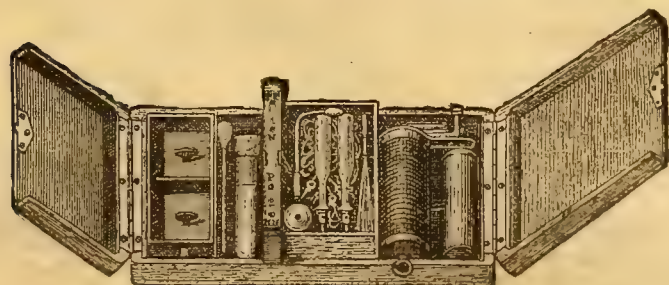
Carbon and Zinc Plunge Battery. With Windlass, 10 cells, plates  $4\frac{1}{2}$ x6 inches, Complete, \$30.00.



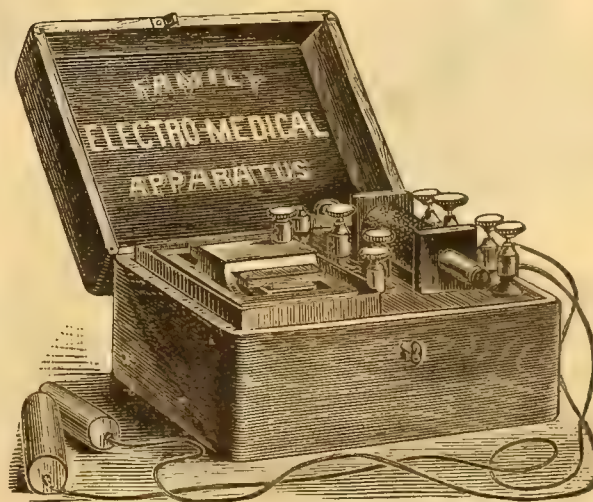
Dr. Kidder's Celebrated Medical Battery. Complete, with Electrodes and Sponge Holder, \$20.00.



Hall's Patent French Medical Battery. Complete, with Chemicals, Electrodes and Sponge Holder, \$15.00.



Gaiffe's Celebrated Pocket Medical Battery. Complete, with Chemicals and Appliances, large size, \$10.00; small, \$6.50.



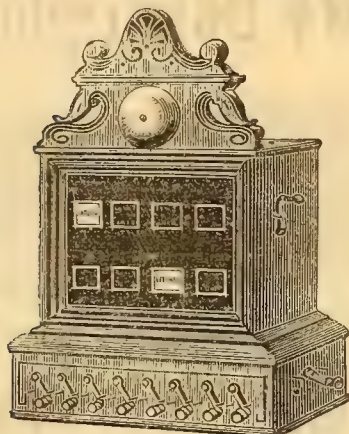
Family Medical Machine. With Sulphate of Copper Battery and Electrodes, Nickel plated, \$10.00.

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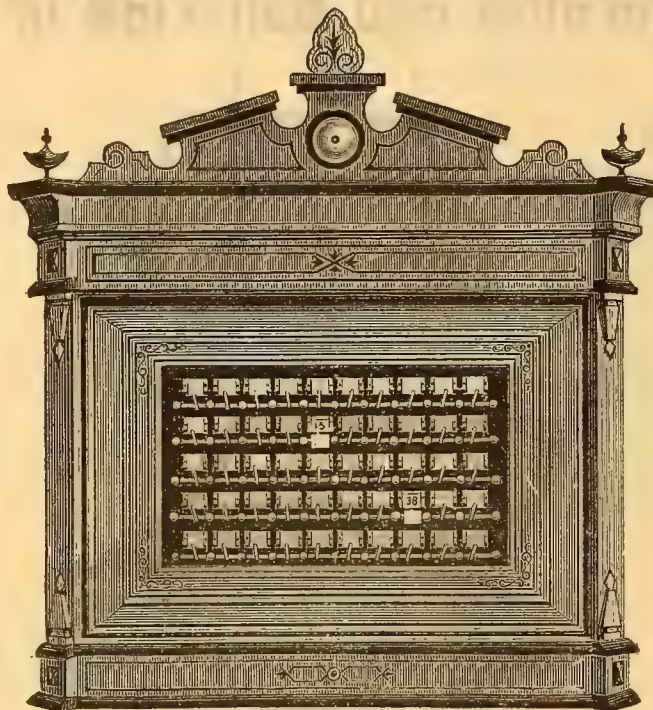
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# ELECTRIC CALL BELL DEPARTMENT.



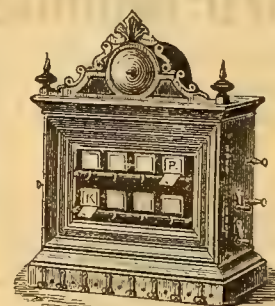
**Improved Automatic Burglar Alarm,  
Perfect in its Operation.**

For 4 rooms.....	\$16.00
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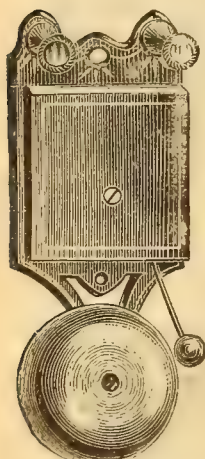
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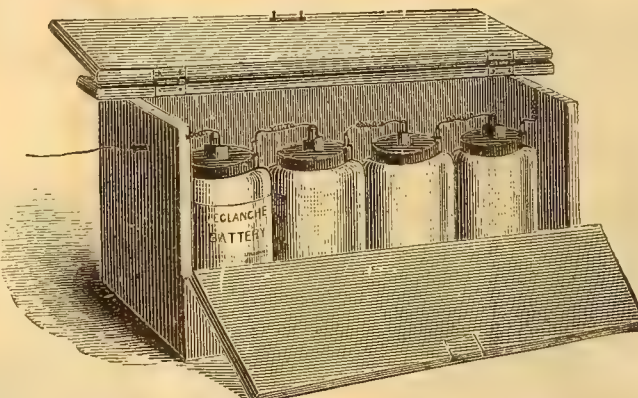
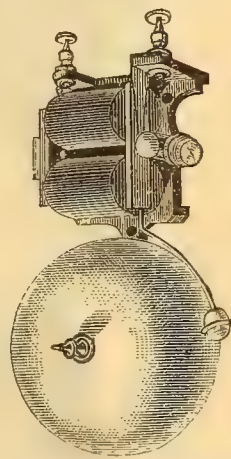


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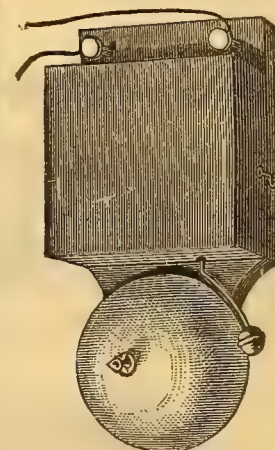


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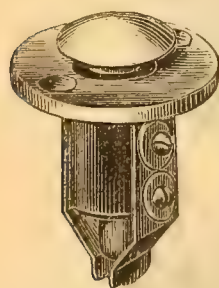


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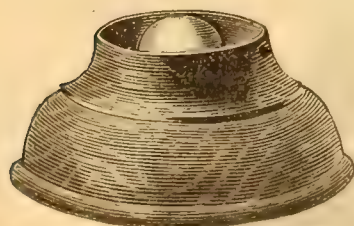
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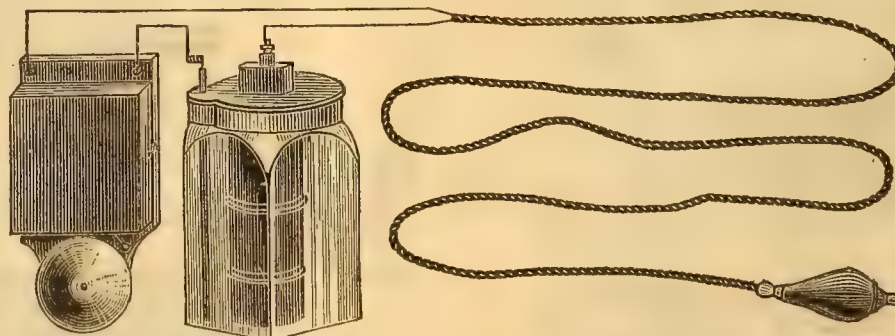
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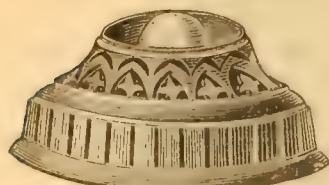
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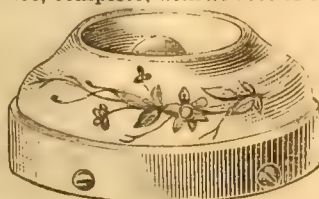
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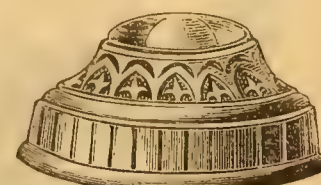
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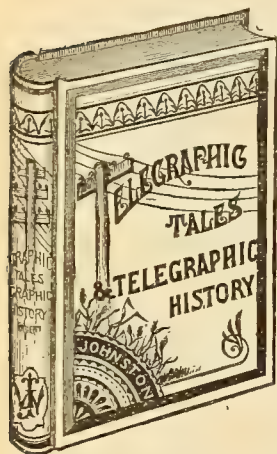


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##### BOSTON.

I take great pleasure in adding my own testimony to the great value and success of the telegraph fire alarm; and I feel confident in saying that wherever once tried it will thereafter be deemed indispensable.

ALEX. H. RICE, Mayor of Boston [1856].

##### ST. LOUIS.

The superintendent of the fire-telegraph of St. Louis, in his report for 1860, says :

"A comparison of the two years' working of the department, prior to the establishment of the electric alarm, with the two subsequent ones, shows the following results : From April, 1856, to April, 1858, there were 568 alarms, of which 175, or nearly one-third, were false.

"The losses by fire during the same period show greatly in favor of the last two years. From 1856 to 1858 the amount of losses was \$1,803,315 against \$710,404 from 1858 to 1860, showing a diminution of \$1,097,911, or a sum equal to \$548,955 annually; and, on the principal that prevention is better than cure, we claim for the fire-alarm telegraph a large share of the credit in saving that amount."



##### TWENTY-ONE YEARS LATER.

The same official in his report for 1881 says:  
"In 1858, when the Electric Telegraph, as applied for fire alarm purposes, was in its infancy, the nucleus of the present system was introduced into this city. It was accepted by the authorities with considerable misgiving as to its practical utility, and it was looked upon generally as an experimental adventure, involving quite a sum of money. As time passed by, however, it gradually began asserting itself; skepticism as to its practical value faded little by little, until finally, guided by scientific research and mechanical improvements, it stands before the world to-day as being one of the most valuable achievements of man."

##### ALBANY.

In this city we would much prefer to have four steamers with the telegraph than eight steamers without it; and the same will hold good in any city. JAS. H. McQUADE, Chief Albany Fire Department.

The fire-alarm telegraph is in complete order, and has worked most satisfactorily during the year. In fact, it has never failed since its construction. It is a most valuable auxiliary to a fire department; for, in truth, without it, it would be unable to maintain the high degree of efficiency shown in our organization. Always reliable, the citizen feels assured that within a few minutes after the discovery of a fire the means will be at hand to extinguish it.—Report of Albany Fire Commissioners, 1874.

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As the simplest illustration of its great value, we have the fires and loss for a fair average year, before and since its introduction.

Before, 85 fires.....	\$140,088 loss.
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A. BERTRAM, C. E. F. D. [1866].

The cost of construction will, of course, depend upon the amount of apparatus required and the extent of territory to be covered. But we have placed the prices of fire-alarm telegraph within the means of all towns, either large or small, willing to expend from \$500 upward to tell their Fire Department on the occurrence of a fire instantly and exactly where it is.

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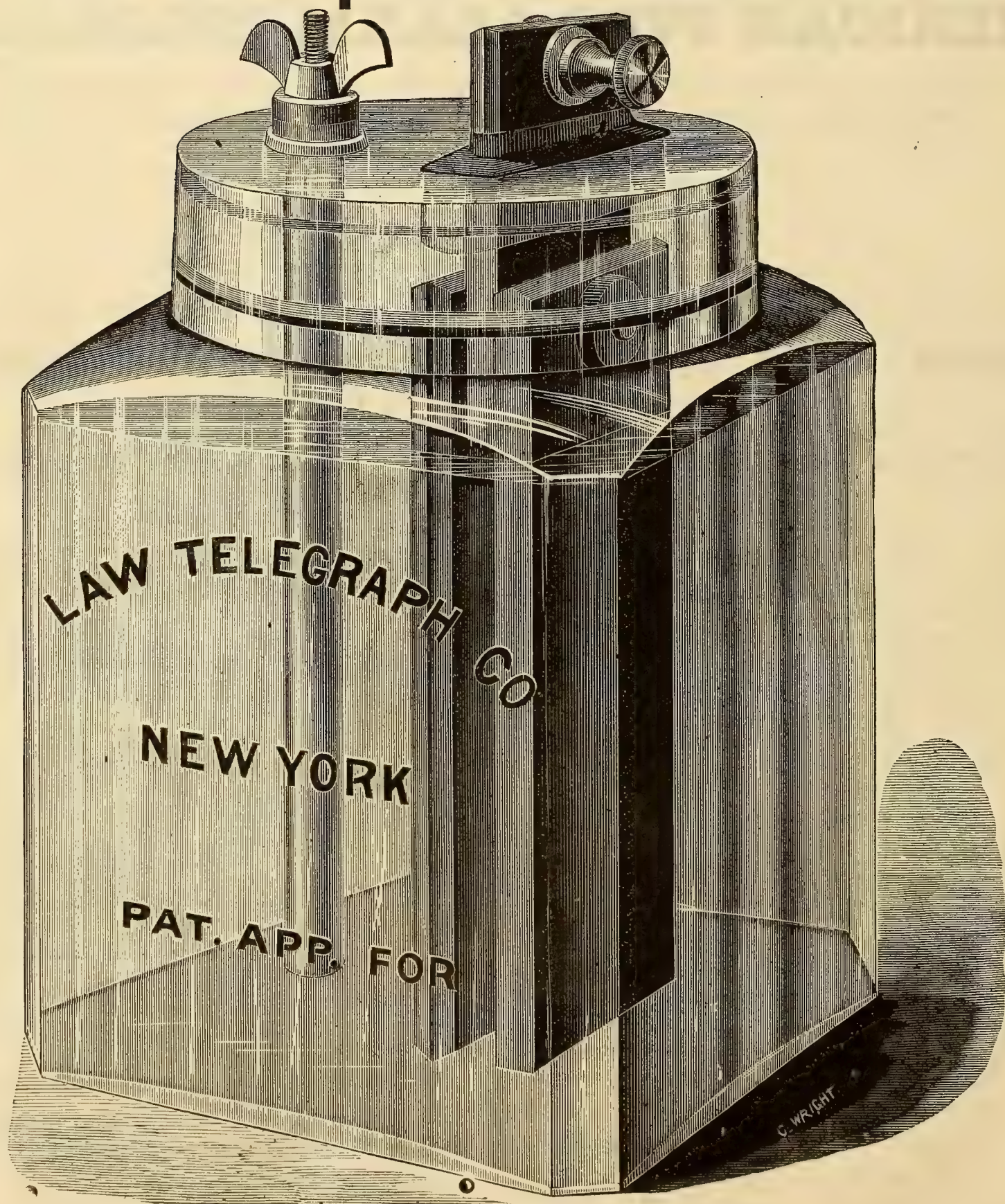
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LETTERS FROM THOSE WHO HAVE USED

# DR. J. H. SCHENCK'S MEDICINES.

**From Mr. Harley P. Hopkins,  
of Providence, R. I. He is  
Cured of Consumption by  
Dr. Schenck's Medicines,  
After Being Given Up  
to Die by Some of  
the best Phy-  
sicians of  
the City.**

Dr. J. H. Schenck :

DEAR SIR: I have been cured of what three of the best physicians of this city told me was Consumption of the Lungs, by the use of your medicines. I was first attacked with the disease in October, 1880, and although I was from that time continually under the care of a physician, I grew worse and worse, until I was confined to my bed. I can hardly say that I was first attacked with the disease in 1880, for my lungs had been weak for many years previous to this, and I would quite often have severe pain in my breast if I took the least cold or exerted myself too much in any way. I grew worse, my cough became very bad; I had night sweats so severe that my bed, through the night, would be as wet as though water had been thrown over me. I was continually raising blood and large quantities of offensive matter from my lungs, and at last had all the well-known symptoms of Consumption in its last stages.

At the request of my family, my physician called in two other doctors of this city, and they, after an examination, agreed that my case was hopeless. They informed my wife that I had better be told that I could not live, as my time would be very short for arranging my worldly affairs. They also said that no medicine would be of any use to me. The next day my friend, Mr. H. I. Leith, hearing of my condition, sent me a bottle of your Pulmonic Syrup, thinking it might relieve my cough and make my expectoration easier. I began using it, never even hoping that it would cure me, but finding great relief from its use. When the first bottle was gone I sent and got more, so I continued it until I had used seven or eight bottles. All this time I was in bed and was so weak that I had to be lifted. This was not a difficult thing to do, however, as I only weighed about ninety pounds. As I have said, I commenced the use of the medicine with no thought of its curing me, but after taking the eighth bottle I would sometimes feel a little hungry, a thing I had not before done for many months. I omitted to mention that after taking four or five bottles of the Pulmonic Syrup I also began taking the Seaweed Tonic, and I also took some of the Mandrake Pills.

It is needless for me to give you an account of all my feelings during my recovery. Of course it was slow, but it was also sure. I gradually gained strength, the character of what I raised from my lungs was changed—not being so offensive—and at last I was able to get up and walk about my room. From this time my recovery was rapid. I gained flesh fast and soon went out doors, and now I am entirely well, a wonder to all my acquaintances who saw me when I was so low.

I weigh one hundred and sixty-two pounds, appetite good, and I can truly say that I never felt better in my life. I consider your medicines as wonderful in their effects. They have saved my life, and I feel so thankful to you that I am anxious that all who are suffering with lung troubles should know how good they are. Of course I can give a better account of my case in telling of it than in writing, and if any who read this are interested, they are welcome to call on me at my residence.

Yours truly,

HARLEY P. HOPKINS,  
No. 2 Howell street, Providence, R. I.  
May 19, 1881.

Mr. Harley P. Hopkins, who writes the foregoing letter to Dr. Schenck, of Philadelphia, is an old resident of Providence. I have known him well for the last fifteen years, and I can assure the public that all he has written in regard to his sickness and recovery is strictly true. He was considered a consumptive, in the last stages of the disease, by his physician and friends, and I believe that his recovery is entirely due to the use of Dr. Schenck's medicines.

H. I. LEITH, Druggist,  
No. 282 N. Main St., Providence, R. I.  
May 19, 1881.

**From an Old Resident of Albany,  
New York.**

WHITE LINE CENTRAL TRANSIT CO.,  
George C. Redden, Agent.  
N. Y. Central Freight Depot,  
Corner Orange and Water Sts.,  
ALBANY, Feb. 16, 1881.

Dr. J. H. Schenck, Philadelphia, Pa.:

DEAR SIR: I write this to let you know that my little daughter Henrietta, whom you saw on your visit to this city in the fall of 1879, has entirely recovered her health by the use of your medicines. I wish also at the same time to give you some facts in regard to her case which I did not have time to do when you were here. My daughter was considered a healthy child until the month of November, 1878, when she was attacked with Remittent Fever, with which she was sick for a long time. As she was recovering from it she took a heavy cold, which settled on her lungs, producing a constant hacking cough. As several of her mother's relatives had died of Consumption, we were much troubled in regard to her case, especially as our physician told us that her lungs were weak, and after her cough had continued some time, that they were seriously affected. He prescribed many things for her, principally cod-liver oil and stimulants; but she kept getting worse and worse, until at last he told us that there was no hope for her recovery; and to satisfy us that he had done all that was possible for him to do, called in two other doctors. They, after consultation, agreed that she must die, and that all we could do was to make her comfortable while she lived. This was in the month of September, 1879. Although we were assured by our physician that our little daughter could not get well, yet we were always looking over the papers to try to find something that would at least preserve her life for a time. One evening I read in the *Albany Evening Times* the statements of many who had been cured of serious lung diseases by your medicines, and feeling that they at least could do her no harm, I concluded to give them a trial. I therefore went to the drug store of Mr. Miller, a gentleman with whom I was well acquainted, and asked him what he knew or thought of your medicines. He said: "I have heard them highly spoken of by my customers, and believe them to be good." I then bought a bottle of the Pulmonic Syrup, as well as some of the Mandrake Pills and Seaweed Tonic, and my daughter commenced to use them according to the printed directions. We all soon saw that they were doing her good. When she had taken them about two weeks, we noticed by the paper that you were to visit Albany professionally, and, taking advantage of this opportunity, we had you see her. Although you did not see her at the worst, you of course remember her apparently hopeless condition. We can only say that from the medicines you gave her she soon rapidly improved, and became healthy and strong. We give you this certificate or letter, that others may know of your great medicines. I am satisfied that you saved the life of my child, as she was pronounced beyond medical aid by three of the best physicians of this city.

Respectfully yours,  
GEORGE C. REDDEN.

**Cured of Consumption after Two  
Years of Severe Illness!**

NEWBURGH, N. Y., March 4, 1879.

Dr. J. H. Schenck:

DEAR SIR: I feel that I am doing good to others by telling you what your medicines have done for me. I was sick with Consumption for over two years, and after trying many remedies and employing the best physicians in this city, without benefit, I was induced to use your medicines. I had hardly taken the first bottle before I felt much better, and after continuing their use for some time was entirely cured. This was over six years ago, and as I have continued to enjoy good health since, I feel that my cure is permanent. I am happy to add my testimony with many others to the efficacy of your medicines. I know many others in Newburgh who have been benefited by their use.

MRS. SOPHIA M. LAWSON,  
No. 59 Ann street, Newburgh, N. Y.

**From Springfield, Ohio.**

SPRINGFIELD, O., Jan. 29, 1880.

Dr. J. H. Schenck:

DEAR SIR: From a feeling of gratitude and a desire to benefit others, I send you this certificate that all may know of the virtues of your remedies. For over one year my case seemed hopeless; I had night-sweats, loss of appetite, a very severe cough, and a complete prostration of my whole system. My physician pronounced my disease Consumption. I was reduced almost to a skeleton, and all the medicines I took failed to give me any relief. I had fully made up my mind that I was incurable when an acquaintance recommended your remedies. I had little faith in them, however, having lost all hope; but in a very short time after commencing their use, I found to my great surprise that I was getting stronger and that my worst symptoms were fast disappearing. I persevered in taking them until I was restored to perfect health. I assure you that language fails to express the gratitude I feel toward you for your skill in preparing so good and great a remedy.

Gratefully yours,

CATHERINE A. STEWART.

**Consumption Cured—From Hop-  
kinton, Mass.**

Dr. Schenck:

DEAR SIR: Last fall I caught a severe cold, which, through neglect, gradually settled in my throat and lungs, causing, as I was told by the doctor who attended me, Ulceration of the Lungs. He, however, said he could cure me, and I was under his care for some time, but I continued to grow worse. At last he told me that my lungs were so bad that he did not think I would ever get well. At this time I was having severe hemorrhages very often, on several occasions raising as much as a cupful of blood at a time. My cough was constant, my nights sleepless, and I had such severe night-sweats that it seemed in the morning as if some one had thrown water over my bed. I was so low that I was not expected to live more than a few days, and it was once reported in the neighborhood that I was dead. When so sick, my father was persuaded by a druggist of this place to give me your medicines. Although he could not believe that they or anything else would cure me, he, as a last resort, concluded to buy a bottle each of the *Pulmonic Syrup* and *Seaweed Tonic*. I used these up according to the directions, and we thought there was a slight improvement in my worst symptoms; so we concluded to continue their use. I used a bottle of the *Syrup* every four days until I used three bottles; then my appetite began to come back and I felt a little stronger. Soon after this my cough left me, and I had no more hemorrhages, and my night-sweats stopped. I am now well, and I write you this to show what a wonderful cure your medicines have made in my case. Any one is welcome to call on or write to me, if they doubt the genuineness of this letter, and I can refer to hundreds who know me in this place and who knew of my severe illness.

Yours truly,

WILLIAM JOHNSON,  
34 Wood street.  
HOPKINTON, MASS., June 9, 1881.

I am the mother of Mr. Wm. Johnson, who writes the above letter to Dr. Schenck. I nursed him through his sickness, and I wish to say that all he has written is true. In fact he could not write it worse than it was. He was in the last stages of Consumption, having all the symptoms—feet swelling, cough, hemorrhages, and night-sweats.

MRS. OLIVER JOHNSON.

**From Henry Morgan, Esq., of  
Springfield, Mass.**

Dr. J. H. Schenck:

DEAR SIR: In the winter of 1862, having been in delicate health from weakness of the lungs for over two years, I took a heavy cold, which settled on my lungs and completely prostrated me. I had a very bad cough, which kept me awake nights and racked me so that I gradually wasted away until I did not weigh more than two-thirds

my usual weight. I was at that time living at Chicopee, Mass., and I consulted the best physicians in that place, but they only gave me temporary relief. It was the opinion of all that I was fast going into Consumption, and I was advised by my friends to consult a prominent doctor of Boston. I did so, but his remedies did not benefit me any, although I took them for a long time. I was very much discouraged, and thought there was no hope for my recovery. About this time I happened to read your advertisement, and among those who testified to the benefit they had received from your medicines I noticed the name of the Rev. Henry Morgan, of Boston. Being personally acquainted with him, although no relation, I concluded to write to him, as I had some doubt about the genuineness of the letter. He answered my letter, saying that it was all true, advising me to at least give your medicines a trial, and he believed they would cure me if I was not too far gone.

I at once began using the *Mandrake Pills*, *Seaweed Tonic* and *Pulmonic Syrup*, as directed by you on the printed wrappers, and I soon saw a marked improvement in all my symptoms; my cough began to get better, my appetite improved, the soreness left my lungs, and I could see that I was gradually getting stronger every day. I continued with the medicines faithfully until I was entirely well, and although my business is one that is considered injurious to the lungs (brass-finisher), I have enjoyed good health ever since.

I thoroughly believe in the curative properties of your remedies, not only from my own experience with them, but from the cures I have heard of their performing among my acquaintances, some of whom were very much worse than I was. You are at liberty to refer to me, and I will cheerfully answer letters from those who are similarly afflicted. Yours truly,

HENRY MORGAN,  
No. 200 Carew St., Springfield, Mass.

The originals of the foregoing letters, as well as many thousand others, which lack of space in this paper prevents our publishing, can be seen by any one at the office of Dr. J. H. Schenck & Son in Philadelphia.

We ask the afflicted to go and see the people who write these letters. If this is impossible, write to them, inclosing a stamp for return postage.

For other Certificates of Cures send for Dr. Schenck's Book on Consumption, Liver Complaint and Dyspepsia. It gives a full description of these diseases in their various forms; also, valuable information in regard to the diet and clothing of the sick; how and when exercise should be taken, &c. This book is the result of many years of experience in the treatment of Lung Diseases, and should be read, not only by the afflicted, but by those who, from hereditary taint or other cause, suppose themselves liable to any affection of the throat or lungs.

**IT IS SENT FREE—**

**Post-Paid, to all Applicants.**

Address, Dr. J. H. Schenck & Son, Cor. Arch and Sixth Sts., Philadelphia, Pa. mentioning this paper.

**DR. SCHENCK'S MEDICINES:**

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Wire Stranding Machines.

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Manchester, - - England.

## BEST TELEPHONE EXCHANGE SWITCH BOARD

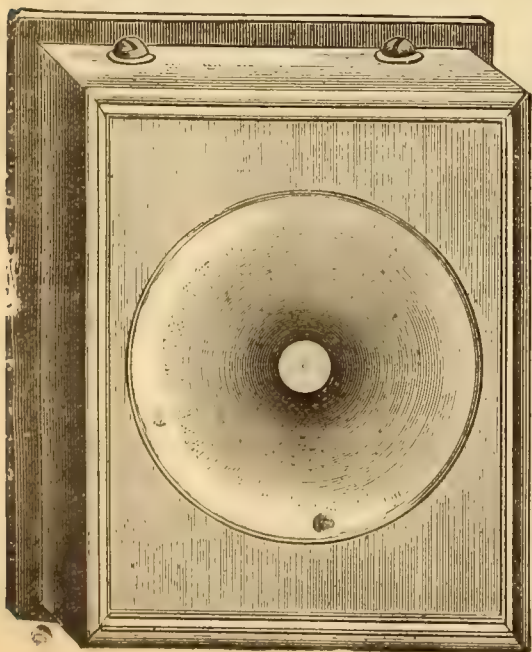
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These instruments work well in all kinds of weather, and may be relied upon for effective service at all times. They are complete in themselves, and are perfect and durable in every part. They are unquestionably the best instruments of their class. We warrant them to work better on all lines within their compass than any other (non-electric) telephone. Elegantly finished. Warranted to work two miles; Reliable and efficient. Price, \$10 per set net. WIRE.—With these new Telephones we use Galvanized Steel Cable Wire of great strength and conductivity. It does not stretch or break, and makes a very permanent line. PRICES.—Double wire for short lines, 3 cents per rod, by express; treble wire for long lines, 5 cents per rod, by express. Metal Insulators, 5 cents each.

**\$4.00 Telephones.**—We also furnish the Improved Automatic (Patented) Telephones for short lines. They work excellently, and are certainly the best telephones for the price now made. Price per set, \$4.00 net. Galvanic Wire for these Telephones, 3 cents per rod, by express. Insulators, 3 cents each.

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**HOLCOMB & CO., Mallet Creek, Ohio.**

[Mention THE OPERATOR.]

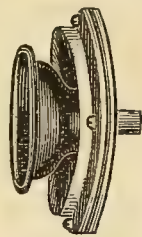
## BALDWIN, HOPKINS & PEYTON, PATENT ATTORNEYS, WASHINGTON, D. C.

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## THE EUROPEAN Telephonic Signal Association

are now prepared to receive orders for their

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RELIEVES

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Supersedes all others.

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## THE FITCH CHLORINE BATTERY.

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The cheapest, cleanest, most economical, durable and decidedly the

## BEST OPEN-CIRCUIT BATTERY

in use for Telephones, Annunciators and Electric Bells. After several years of constant use, it is pronounced to-day as being far superior in constancy and power to all other batteries for the above purposes, notwithstanding all statements to the contrary. We have made several valuable improvements in this Battery, among which is the substitution of a non-corrosive and adjustable clamp, in place of the old style lead cap, which warrants us in saying that

The Chlorine Battery has no Equal in the Market, and all we ask is a trial.

Price, \$1.50 per cell.

Liberal Discount to the Trade.

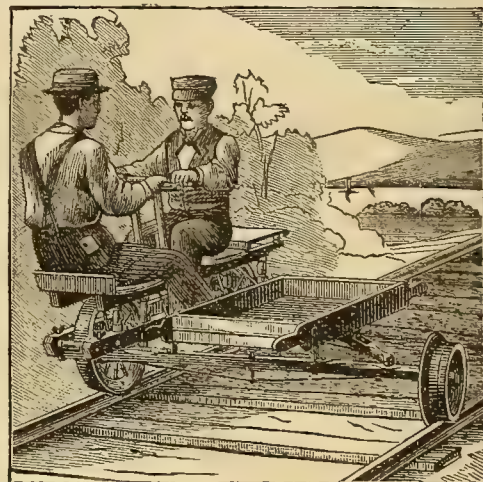
**Partrick & Carter,**

SOLE AGENTS AND MANUFACTURERS,  
NO. 114 SOUTH SECOND STREET,

Philadelphia, Pa.

## THE PATENT

Telegraph & Light Section Hand Car.

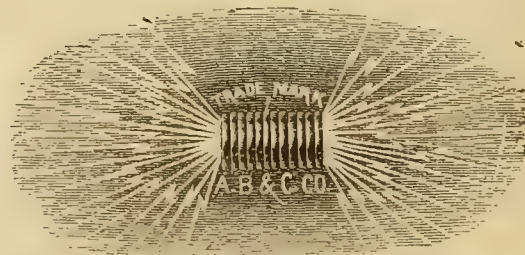


Our New Two-man Car, lately introduced on a number of prominent roads, is giving entire satisfaction. Full Descriptive Circulars sent on application.

**GEO. S. SHEFFIELD & CO.,**

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## PURE ELECTRIC WIRE.

MANUFACTURED BY THE

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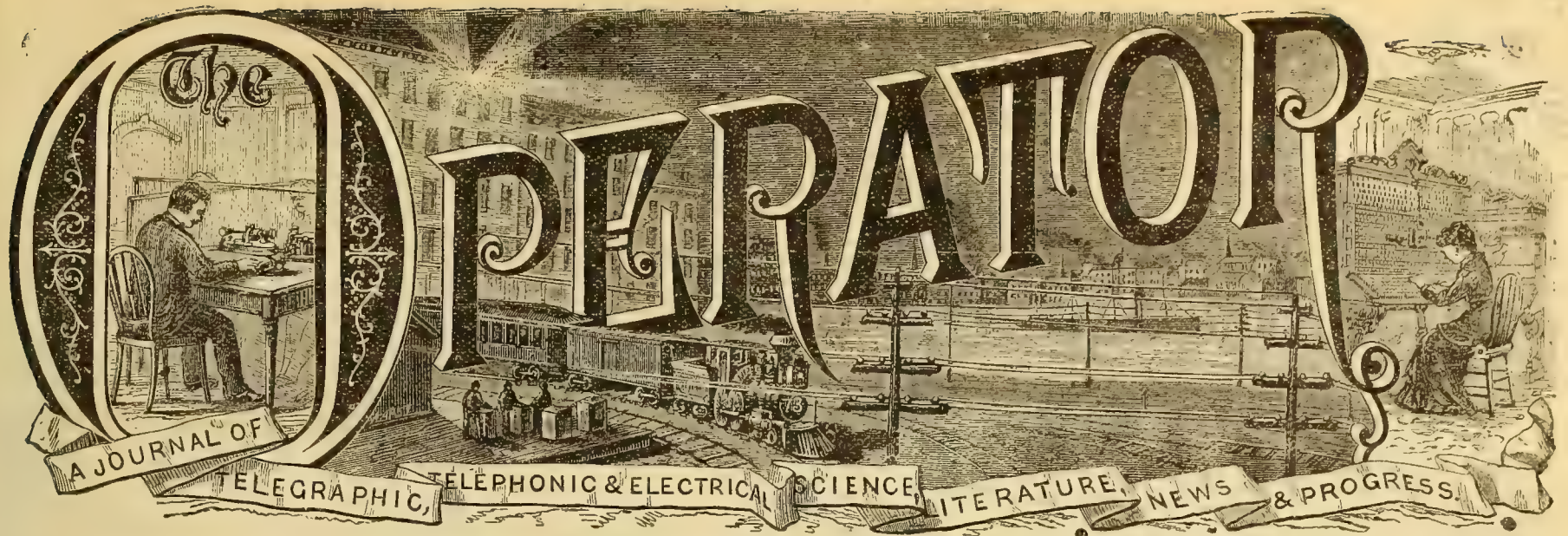
For Magnets, Telegraphs, Telephones, etc., Insulated on the Bare Wire with H. Splitdorf's Patented Liquid Insulation, covered with cotton or silk.

All sizes of BARE AND COVERED WIRE in stock. The Conductivity of every bundle tested and warranted.

**THE ANSONIA WROUGHT GONGS** for Clocks, Indicators, Telephones, Call-Bells, Bell-Punches, Steamboat and Railroad use—burnished or nickel-plated.

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VOL. XII.—No. 22.

NEW YORK, NOVEMBER 15, 1881.

{ ONE DOLLAR A YEAR.  
5 CENTS PER COPY.

### The Sheffield Telegraph Hand Car.

We take pleasure in presenting to our readers in this issue a sketch of a novelty in the way of a hand car which is giving excellent satisfaction wherever introduced.

It is very light, being much less than half the weight of an ordinary hand car and so constructed that nearly every pound of force expended in propulsion is utilized for motion, the friction and loss of power so noticeable in the common car being reduced to the minimum.

The materials are mainly ash and the very best quality of wrought and cast iron, combined in such a way as to secure the utmost lightness and strength, with every part fully braced. The wheels are so made as to avoid very largely the flange friction so destructive of power on ordinary styles of cars. Power is applied by an upright lever worked by two men who sit facing each other, the feet of both also engaging mechanism which aids in propulsion.

The strength of this machine is adequate to the power applied and to the usage it is likely to receive, while at the same time it is so light as to be easily lifted from the track when occasion requires. And although it is made to accommodate two men, it may be easily operated by one person, or it can be readily run by two men, who may carry the third man in place of the tools and if necessary a fourth man on the rear seat.

The value of this invention will be appreciated by those whose duty requires them to pass frequently over railway tracks, and who have heretofore used only the cumbersome and power-wasting hand car. It is invaluable to telegraph-line men, track repairers, bridge builders and inspectors, and, in fact, to any class of men having to do with railways and telegraph lines. It is also well adapted to light section work, and has been adopted by several roads for this purpose, and so far with excellent success.

This car is having a very large sale, the firm finding it difficult to fill their orders. As an evidence of the manner in which they have been received by railroads, it is stated that a sample one was sent to New Zealand about a year ago, from which an order for twenty has recently resulted.

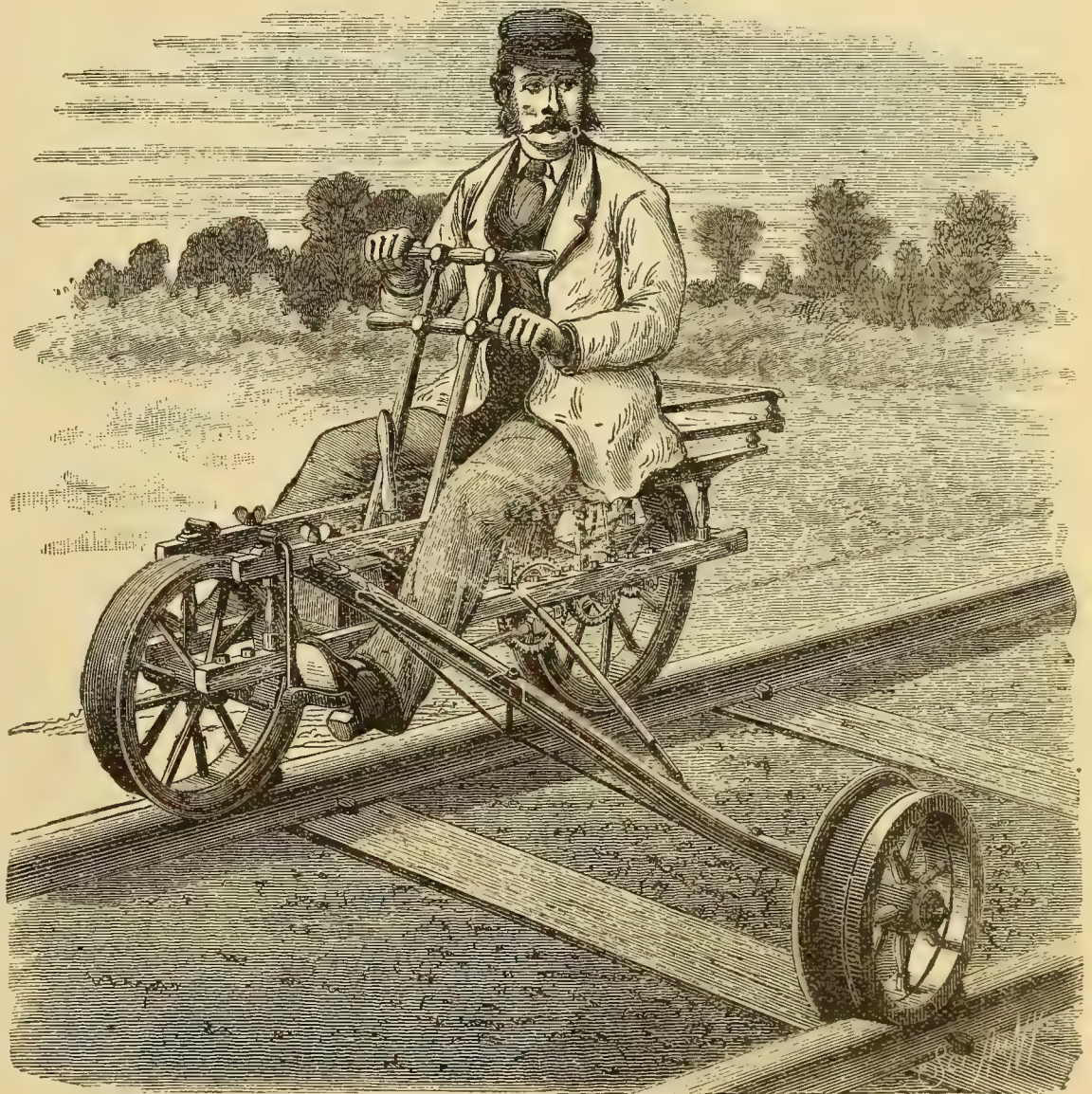
Any further information may be obtained from Messrs. Geo. S. Sheffield & Co., sole manufacturers, Three Rivers, Mich.

nal Office, United States Patent Office, Smithsonian Institute, Washington.

Diplomas of Honor for Inventors.—Alexander Graham Bell, Thomas A. Edison.

Gold Medals.—Elisha Gray, Harmonic Telegraph; Sumner Tainter, various inventions; Uni-

and Fire and Burglar Alarms; Pond Indicator Co., New York, Electric Indicator; Western Electric Manufacturing Co., Chicago, Telephone Exchange; Weston Electric Light Co., Newark, N. J., Electric Lamps and Dynamo Machines. Bronze Medals.—Clinton M. Ball, Troy, N. Y.,



THE SHEFFIELD TELEGRAPH HAND CAR.

### The Closing Days of the Paris Exhibition.

[From the Special Correspondent of The Operator.]

The result of the juries' labors was announced at a meeting of exhibitors and others connected with the exhibition, held in the Conservatory of Music, on Friday, Oct. 21. The following is a list of the recompenses awarded to America:

Diplomas of Honor for Ministries, Administrations and Scientific Societies, United States Sig-

ted States Electric Lighting Company, Maxim's System.

Silver Medals.—Bailey & Puskas, Railroad Signals; Dr. W. G. A. Bonwill, Philadelphia, Electric Mallet for dental purposes; Connolly Bros. & Tighe, Washington, Automatic Telephone Exchange; A. E. Dolbear, Telephone; Sergt. A. Eacard, U. S. Signal Service, Meteorological Recording Instruments; Electro-Dynamic Co., Philadelphia, Electric Motor; Electric Purifier Co., New York, Electric Middlings Purifier; Charles W. Hubbard, Boston, Electric Hotel Indicator; Wm. J. Philips, Philadelphia, Printing Telegraph

Electric Lamps; Victor Chavet, Paris, Carbon for Electric Lamps and Batteries, American manufacture; George Cumming, New York, Periphery-Contact Telegraph Key; Chas. Dion, Montreal, manufacture of Copper Spirals for winding magnets; Hoosac Tunnel Tri-nitro-glycerine Works, North Adams, Mass., Fusees and Insulated Wire; August Partz, Philadelphia, Battery; Photo-Relievo Company, New York, Photographs in relief and bas-relief obtained by the action of light and electricity; White House Mills, Hoosac, N. Y., Dynamo Machines; Charles Williams, Jr., Boston, Telephonic Apparatus.



Thus America receives five diplomas of honor, three gold, twelve silver and nine bronze medals, which, when we take into consideration the fact that our exhibit is a small one, is a very creditable showing. England receives ten diplomas, eight gold, thirteen silver and fifteen bronze medals, and France gets twenty-five diplomas, forty-one gold, seventy-nine silver and one hundred and fifty-eight bronze medals, out of a total of one hundred and twenty-one diplomas, seventy-eight gold, one hundred and fifty-two silver and two hundred and sixty-two bronze medals awarded. The French exhibit comprises rather more than one half of the entire exhibit, but, as I mentioned in a former letter, a great deal of it is mere electrical clap-trap. It may be an ungrateful thing to say, but it is the general impression among the foreigners that the medals have been distributed too profusely among the French exhibitors. No exhibitor was awarded more than one diploma or one medal, but Edison was recommended for a diploma by three different juries. The report telegraphed to America that he had received five gold medals was erroneous, although he received the highest award in the power of the jury. The Brush light took a gold medal also, but was exhibited in the British section, so that America does not receive the credit for it.

At last, after many delays, and after the juries have made their examinations, the great Edison engine has been got ready and commenced to work. It is said to be capable of lighting 1,200 lamps, but at the present writing not more than 500 have been put in circuit at any one time. It was originally intended to light the grand staircase with this system, and during the delay in getting the lamps and engines placed the lighting of the staircase has been done by arc lights. The work of installing the Edison lamps is now being pushed vigorously. The effect, so far, is very fine, but it seems to be almost a needless waste of work, as the exhibition closes in another fortnight.

Mr. Marcel Deprez's system for the division and transmission of power is also late in being placed. Enough of it is working, however, to show that he has accomplished some very wonderful things. He has now in circuit twenty motors running small machines, from a sewing machine up to a printing press; and, on the same circuit, fed from the same generator, are two arc lights. The power for all this work is derived from a four-horse power gas engine, driving a small Gramme machine. Mr. Deprez has proven himself to be one of the foremost inventors and electricians of the day. The principal objects shown by the Ministry of War for measuring the velocities of projectiles, and by the different railroad companies in the shape of railroad signals and speed indicators, are among his inventions. He has been awarded a diploma of honor, and his was the only case in which a diploma was awarded by a unanimous vote of the jury.

The lighting of the opera-house by electricity has not been the brilliant success that was predicted. The arc lights did well enough, but the incandescents were so poor that the gas was lighted to help them out. The Maxim light gave the most satisfactory result of this class and has been promised another trial soon, but the fate of the Swan and Edison lamps may not be so favorable.

The Prince of Wales has visited us twice this week, the last time in the afternoon, when he was shown around the different sections by the British Commissioners. He manifested quite an interest in the objects exposed and particularly in the various multiple telegraphs. Professor Bell, happening to be in the building at the time, was presented to His Royal Highness and had quite a long chat with him. The party were afterward conducted to Edison's rooms, and among other things were shown the phonograph. Mr. James Hipple, who "causes to function" this instrument, regaled the Prince with "Yankee Doodle," some plantation songs, laughing, crowing and coughing, which amused the guest very much. This Mr. Hipple has had the honor, so unusual for Americans, of singing several times for royalty—in the phonograph. He entertained King Kalakaua one evening with "There was an old nigger, and his name was Uncle Ned."

The Crystal Palace Electrical Exhibition is

advertised to open about Dec. 24, and is beginning to attract considerable attention. Many of our exhibitors here have already secured space, among whom are Messrs. Connolly Bros., Dolbear, Bell, Edison, Maxim, Weston, the Electro-Dynamic Co., the White House Mills and others. Some of the American Commissioners have already sailed for home, and a number of the exhibitors intend leaving just as soon after the 15th as they can. Everywhere there are signs of the approaching dissolution of the exhibition, and to those of us who have spent three months here these signs are very welcome. The novelty has worn off, and those who expect to go home next month are longing for the sailing day to arrive. The closing is officially announced to take place on Nov. 15.

### The Telephone Switch-Board.

Nothing is more important to the telephone exchange manager than the switch-board. It is, as it were, the central sun around which all his other apparatus revolves—the medium through which his respective instrumentalities gain an operating hold upon the lines radiating from the central office, and thereby to the subscribers' offices located thereon.

Culley, one of the old masters on electrical literature, particularly that class of electrical literature relating to the transmission of intelligence from one point to another, defines a switch-board in the following terms:

#### SWITCHES OR COMMUTATORS.

"These are employed for connecting one circuit to another, for dividing a circuit, or for any purpose where connections have to be altered more frequently than it would be convenient to do at the test box."

Pope, an equally good American authority, uses almost the same words, viz: "These are employed for the purpose of connecting one circuit with another, for dividing a circuit into two parts, or, in short, for any purpose where it is necessary to alter the connections of a line or circuit."

Prescott says the object of a switch is to "facilitate the making of the necessary changes in the connections of the wires," and "for interchanging the wires among themselves."

This last definition gives the key to the name, "commutator," generally given in European countries to this piece of apparatus. The word "commutator" may be explained literally by the word "interchanger."

The switch-board, as generally used by telegraph offices in this country, has never found much favor in England, its place being filled to a measurable extent by the testing board, a plain board on which binding screws are symmetrically arranged, to which the several wires are led, and which are then connected as may be found desirable by short wires.

The above-mentioned fact may account for the absence of switch-board patents taken out by English inventors.

It is a fact that the published abstracts of English electrical patents, from the earliest ages of antiquity to the year of 1868, A. D., disclose no patent for the switch-board; consequently that class of inventors who make these abstracts the basis of their productions have had to go it alone, if we may so speak. Moreover, extremely little was done in this line of invention, or rather patented invention, even on this side of the Atlantic, until 1867, when Brownson, of Wells-ville, Ohio, patented a switch-board whose front was so covered with little brass studs and buttons as to remind one of a French accordeon, while its rear was such an inextricable network of wires as to compare favorably with the celebrated labyrinth of Crete. The writer, in the days of his ardent youth, ordered one of the first of these switches, and well remembers the unspeakable awe with which he was wont to contemplate its mystic glories. This, however, though one of the first patented, was by no means the first invented. The first switch-board of which we have personal knowledge, was that devised by that veteran of the Telegraph, J. Murray Fairchild, of New Haven. It consisted of a series of dials, arranged each with metallic studs round its periphery, connect-

ing with the several lines and provided with a button pivoted at the centre of the dial and capable of being placed upon any one of the studs, thus changing the course of the line which was permanently attached to the button. This switch-board was invented by Mr. Fairchild away back in the fifties, and until quite recently held a place in the Western Union offices of New Haven, Bridgeport, Stamford and South Norwalk. For its time, it was a really ingenious and useful piece of mechanism, as is unwillingly attested by several subsequent inventors, who, without knowing anything of the Fairchild board, have independently invented or devised the same thing. No switch-board has had the honor of such frequent invention as this. Mr. Fairchild did not patent it.

The Culkan switch was a Pittsburgh idea and came out in 1868. In it the line wires were led to upright metallic strips ranged on the face of the board, and attached to them by screw posts at the top. Cross wires run on the reverse side of the board, in connection with binding screws on the edge, to which the instrument wires were led, and with pivoted buttons arranged between the strips and capable of being turned on to the strip on either side. This had a fairly long and useful life, and is even now used considerably in Western Pennsylvania and New York. Those who desire to know more of this board will find it fully described in "Pope's Modern Practice of the Electric Telegraph."

This switch, though fairly satisfactory, yet had some disadvantages. The pivots would work loose and invisible troubles would arise, and the circuit manager would need a good "eye-glass in his ocular" to discover their source. Its general employment, too, was but evanescent. It was in due course succeeded by the Western Union pin switch, which is now known, we may almost say, the wide world over. It is, indeed, so widely and well known that a description seems superfluous.

None of these switches were ever patented, although more worthy of that honor than many of the nondescript appliances lately given to a confiding public, and protected, for no earthly reason, by the mystic formula, "My invention relates to electric switch-boards, etc." All the switches heretofore mentioned were designed for telegraph service, and the inventors of the same appeared to recognize the fact that they were all mere modifications of one wide principle—namely, that of two sets of conducting strips, arranged upon a frame at right angles with one another, and some means to connect any one of one series with any one of the other series.

This principle is known as that of the Swiss Commutator or Universal Switch. It is very old, and has been liberally used on the continent of Europe. Like *Topsy*, "it never was born; it grew."

One other of the old switch-boards deserves notice; namely, the Jones lock switch. Its distinctive feature was that two sets of metallic plates were arranged transversely with regard to each other, holes bored at each crossing point, and a slot cut in the hole of the upper plate. The connection was made by a plug or pin, provided at its lower end with a spiral spring, and higher up with a pin fitting loosely in the slot of the hole.

To insert the plug, it was turned so that the pin slid in the hole, and as soon as it had passed the upper plate, it would be turned round. The pin, no longer coinciding with the slot, would, of course, hinder the plug from coming out. In later years this board was used as a telephone switch.

When the central office telephone business was introduced, it was largely manipulated by men who, though possessing marked ability, yet had no previous knowledge of telegraphy or experience in electrical communication; and, in fact, this lack of experience was emphasized by a supreme contempt for the professional ability of telegraphic electricians.

The cry was: "Gentlemen, the telephone is a new thing, an instrument of surprises, and you must unlearn all you know before you can successfully handle it." In some things this was partly true, but our telephone friends made the mistake of jumping at a conclusion from incomplete premises, and to-day, when the telephone exchange is one of the institutions of the land, none have achieved greater success, or have attained a more abiding prominence, than those



who first graduated as telegraphic electricians. Holding the views enunciated above, it might have been expected that the labors of the condemned class would also be ignored, and such was the case. Instead of improving the switch-boards and other electrical appliances ready to their hands, new ones must of necessity be invented, and the new inventions protected by patents.

Hence the tremendous influx of switch-board and other patents. A careful examination of late switch-board patents will, however, show that very few really new ideas are exhibited by any of these so-called inventions, the majority of them being for some new and alleged improved form of connector between the vertical and horizontal-conducting strips. Occasionally—as in the device of Mr. Ellsworth, who shows a method of readily ascertaining which connecting strip is already in use—we find a new object gained, but not often.

To make a good telephone exchange switch-board, however, out of an ordinary telegraph switch, we concede that considerable remodelling is necessary; and after the first heat of invention was over, practical men began to look about them, to see the disadvantages they were laboring under and endeavor to overcome them. It was seen that time and money were, in telephone offices, the two main articles to be economized. Time, because speed of connection is the very life-blood of the business. Money, because in many of the exchanges the telephone business was managed and owned by men of little or no capital; and, in others, the expense, in any case, would be great, and economy was necessary to make anything at all out of the business.

Soon, therefore, it became obvious that the telephone switch must be compact; all the apparatus must be easily and quickly under control; everything about it must be well made and well put together; the motions required in a connection must be reduced to a minimum, and yet the apparatus must be cheap.

The cry of cheapness for a long time obscured the vision of the practical man, and many switch-boards unworthy of the name were sent over the country; but a healthy reaction has taken place, and the general character of the telephone switch is much improved.

It was early discovered that an escape or a ground through a telephone did not have the ruinous effect upon telephone lines that it has always had upon a Morse telegraph line, and this fact was utilized by the construction of appliances for listening at the central office, and thus supervising a connection which, instead of looping the listening telephone completely into the line circuit, merely connected it by a third leg to the ground; or, technically speaking, to the two lines connected for conversation.

This practice was generally cheap, both in first cost and results, and does not rank as a success, especially where a long line is connected to a short one. It is found in practice that the listening telephone takes way much of the electricity. The best manufacturers now arrange to have the try-telephone looped in.

The telephone switch-board, as at present made and sold, comprises the following features: Annunciators to receive calls, battery keys or magneto-generator to answer calls and to signal subscribers when wanted, appliances for connecting any two circuits for intercommunication, appliances for supervising connections and listening off, and frequently an annunciator between two circuits when connected, to allow the subscriber, if he pleases, to ring off. Vain hope!

It is not to be expected that in an article of this general character, any special telephone switch will be described; that pleasure the writer reserves for special articles. But to those who are going to buy, one word. Get a board by which the necessary functions are performed first, well; secondly, quickly, and you will in the end be better satisfied, even if you have to pay well for it, than if you paid a nominal price and bought a patent scarecrow.

T. D. LOCKWOOD.

A clerk in a Cincinnati store, in attempting to remove some goods from a show window by means of a brass rod, recently, accidentally touched an electric light wire and received a shock that threw him headlong through the plate glass to the pavement. His face was badly cut, but he was not permanently injured.

### Review of the Past Two Weeks.

The past fortnight has been very quiet, telegraphically. Nothing further has been heard from the Mutual Union's charges of bribery, and that company still retains the one hundred dollar bill and the three fifty-dollar bills, which they claimed had been used to bribe one of their clerks.

Perhaps the most important event of the fortnight was the gathering of telegraphers on Sunday last, in the United States Hotel, this city. The occasion was a general meeting of the organization heretofore known as the Telegraphers' Mutual Union. Mr. E. T. Howell acted as chairman of the meeting. Considerable discussion took place as to whether alien members from other associations of the fraternity could come into the Mutual Union without the payment of dues and on the strength of this connection, resulting in an appeal to the constitution of the organization, which effectually settled the question by forbidding any coalition except by those having offices and employment in the district, which is bounded by Albany on the west. It was stated that confusion had arisen, and was likely at any time to arise, confounding the society, on account of its name, with the Mutual Union Telegraph Company. The name of the organization, therefore, was changed to the "Telegraphers' Union." It was agreed, for the protection of members, that no member of the association shall, during the next five years, instruct any outsider in the mysteries of the profession. It was also proposed to take action looking to the protection of the profession, as regards the cutting down of salaries, the desired remedies to be sought without the intervention of "striking" or refusing to comply with rules, which is a line of action distinctly opposed to the genius of the Union, the constitution of which distinctly reprobates "strikes."

The operators at Washington, D. C., also held a meeting on the 6th inst., at which they talked over their grievances. Chief among them is the employment of employes, telegraph operators from the signal office and other government bureaus to do extra work. They claim that, having borne the burden and heat of the day last summer, they are entitled to consideration when extra work, at extra pay, is to be done.

Gen. Hazen instituted an investigation in regard to this subject last week, the only result apparent from which was the return of the Signal Service men to the Western Union office to continue their depredations on the pockets of the regular force. These "extra" men are not only a disadvantage to the regular force, but also to the fraternity at large, as their withdrawal would create six first-class vacancies in the Washington office.

Another grievance is the non-allowance of extra compensation for Sunday work. The meeting was preliminary to another, out of which will probably come a proposal to enter the National Association of Telegraph Operators, with a view to the righting of their wrongs.

The Mutual Union Company opened formally for business yesterday, although it is not soliciting custom at present. The main office in this city has been stationed temporarily at No. 45 William street, and 15 branch offices have been opened at various points in the city. The lines now approaching completion will reach Albany, Buffalo, Cleveland, Cincinnati, Chicago, Milwaukee, St. Paul and Minneapolis, and all intermediate points on the lines of the New York Central, Lake Shore, and Milwaukee & St. Paul railroads; Glen's Falls, Rutland and St. Albans, in Vermont, and Canadian points to Montreal; Tonawanda, Niagara Falls, Hamilton and Toronto, Ontario; Portland, Bangor and Augusta, Me.; all points on the Chicago & Alton Railroad between Chicago and St. Louis and between St. Louis and Kansas City; also all points South and West touched by the Baltimore & Ohio Railroad system. The company has made a contract with the Lehigh Valley Railroad for the use of its telegraph system, and with the Brooklyn bridge trustees for a cable of ten wires upon the bridge. The company pays better salaries to operators and leases private wires at 33 per cent. less than the Western Union, and will begin to take general messages at ten per cent. less than that company, although there is some doubt as to the wisdom of the latter course.

The New York Produce Exchange has granted leave to the Baltimore & Ohio Railroad Com-

pany to furnish to the Exchange telegraphic facilities to the West. As the Mutual Union Telegraph Company has a contract to perform the work of the Baltimore & Ohio Company, it is thought that it is actual mover in the matter. The Produce Exchange, it will be remembered, has recently complained bitterly of the service of the Western Union Company.

The "Central Construction Company"—Jay Gould's double in the bogus American Union Company—has taken strange action lately. The Central Construction was organized to build the lines of the American Union Telegraph Company. When it had completed that work and the American Union wires had passed into the possession of the Western Union Telegraph Company it was supposed that there was no reason for the longer existence of the Central Construction Company. A petition for its dissolution was, therefore, in July last presented to the Supreme Court, and a referee was appointed to inquire into the matter. Since then some reason has arisen for the continuance of the corporation in existence, and Messrs. A. H. Calef, Giovanni Purissimo Morosini, W. E. Connor and Joseph Owen, a majority of its directors, petitioned for leave to withdraw the petition for dissolution, but without stating what impelled them to take this course. Judge Barrett, in Supreme Court Chambers, on the 5th inst., made an order discharging the referee and discontinuing the proceedings for dissolution.

The underground system has been submitted to a most successful test, a report of which will be found in another column.

The idea of electric railways has also received a boom by a visit to this city from Dr. Siemens, who constructed the electric railway in Berlin. He became intimate with Messrs. Jay Gould, Russell Sage and Cyrus W. Field soon after his arrival in this country, and is reported to have interested them in the idea of adopting the electrical motor upon the elevated railways here. A few days ago, in company with the three gentlemen named and General Manager Hain, he made a trip of inspection over the different lines. Mr. Russell Sage says that it is possible—he declines to say that it is probable—that the result of that conference would bring about a complete revolution in elevated railroad management, so far as relates to a propelling force.

Chestnut street, Philadelphia, from the Delaware to the Schuylkill rivers,  $2\frac{1}{2}$  miles, will soon be ablaze with the electric light.

At the fire at Woodstock, N. B. last Thursday night, both the telegraph offices were destroyed.

Western Union stock is quoted at 86 $\frac{3}{8}$ . Last issue it was 87 $\frac{1}{4}$ .

### A Model Office.

The Western Union main office at Tenth and Chestnut streets, Philadelphia, built entirely of gray granite and iron, thoroughly fireproof and elegantly frescoed, is probably the finest telegraph office on the continent. It is three stories in height, and surmounted by an immense mansard roof and with a "New York basement" and sub-cellar forms a spacious edifice.

The upper floor, or mansard roof, one large room on the third floor, and the basement and sub-cellar, leased by the Western Union Company, are fitted up most elaborately, no expense being spared in rendering everything as perfect and convenient to the employes as possible. In the sub-cellar are the batteries, which have been systematically arranged for the greatest convenience and efficiency. The steam engine for furnishing power to the net-work of pneumatic tubes is also stationed in the cellar.

The Receiving Department is situated in the basement, and fitted up in a style which is rarely seen outside of the Capitol at Washington. The Delivery Department is also on the same floor.

On the third floor is the office of Mr. John E. Zeublin, the Superintendent, and one of the most efficient and popular executive officers in the service. His district comprises the entire States of New Jersey, Delaware and Maryland, the District of Columbia and the State of Pennsylvania east of the Allegheny Mountains, including Bedford and Altoona. The efficiency of the service in this great district is sufficient testimony to the executive ability of Mr. Zeublin.

On the fourth floor, reached by two elevators and easy flights of marble steps, is situated the operating room, coat room and clerk's room. The operating room is a chamber seventy-five



by sixty feet, with a ceiling fifteen feet in height beautifully frescoed in light blue and gold. The original floor—marble tiles—has been overlaid with a flooring composed of alternate strips of walnut and ash two inches in width. There are fancy wood tables for 106 instruments, exclusive of the tables occupied by quads., duplexes and repeaters, arranged in compartments of four, six and eight, with French plate glass partitions.

The switch-board, which is of the new Western Union pattern, consists of four sections, each section capable of accommodating fifty wires. Even with this capacity it is so crowded at present that it has been found necessary to run all the city wires direct to the instruments, without passing through the switch-board. Arrangements are now, however, in progress to add two more sections to it, thus giving it a capacity of 300 wires.

In the office there are four quadruplex circuits working between Philadelphia and New York, in addition to the motor-printer, and including one from the Philadelphia Stock Exchange to the New York Stock Exchange. A sixth quadruplex circuit is formed by the "C. N. D. quad." to Baltimore, and all of them are kept constantly manned. The duplex circuits in the main office are: Chicago, Cincinnati, Pittsburgh, Baltimore, Washington, Boston, Harrisburg, Atlantic City and Cape May; at "C. U." (Third and Chestnut) there is a duplex to the New York main office, and there are two duplex circuits from brokers' offices on Third street to the New York Stock Exchange—twelve duplex circuits in all. In addition to these, eight branch offices work direct to branch offices in New York, independently of the main office in either city, beside separate wires to the New York main office.

There are 88 first-class working wires, which, if necessary, could be increased to 120, between New York and Philadelphia, owned by the Western Union, exclusive of "way" and railroad wires. They also own and operate 53 first-class wires between Philadelphia and Washington.

The business is enormous, the average number of messages exchanged between Philadelphia and New York being 3,500 daily. This estimate does not include the business of the branch offices, which amounts to from 1,000 to 1,500 more each way per day. It is safe to assert that the two cities named are the two busiest, telegraphically, in the world.

The operating force consists of 145 operators—105 day and 40 night—including the city line, among whom are about 25 lady operators.

Since the late consolidation the entire working force has been remodeled, and the *personnel* of the office has been improved. Inferior operators at low salaries have been replaced by more able men, generally at higher salaries, while 35 more men are employed on the force—an increase of help which has been needed for two or three years back. Indeed, Philadelphia has not only to answer her own demands for prompt service in cases of emergency, but, being centrally located between New York, Baltimore, Washington and the West, it has to supply frequent demands from other towns where there is an unusual rush of business, and there is scarcely a day passes when it has not to respond to some such demand from an adjacent town. Sometimes the sudden and urgent demand is for eight or ten men at once, and even for more, as was the case at Long Branch and Washington during the late President's illness.

The following changes, in the nature of reform, have been made during the past summer: Mr. William G. Jones, manager, vice Mr. Heber C. Robinson. Mr. John D. Clarke, late chief operator of the American Union, to be chief operator in the place of Mr. George W. Porter, promoted to be chief clerk in the superintendent's office, Mr. Porter having general supervision of the accounts in the district offices. Mr. William H. Dillon, late of the American Union, to be assistant chief operator, with general supervision of the wires and business of the office. Chief Joseph T. Wilde retains his old position, looking after the wires north and east. Mr. Charles H. McConnell, late of the Western Union office, Pittsburgh, to be assistant chief operator, with supervision over the wires south and west. Mr. Charles Jamison to be cashier, vice Mr. William Carley, resigned. Mr. S. S. Garwood to be manager at "C. U." (Third and Chestnut), vice Mr. Frank W. Griffin, who will remain in the

same office to look after the American Union wires and business—this office and the American Union main office having been combined to facilitate business. In these duties Mr. Griffin is ably assisted by Mr. D. J. McLoraine. The combined W. U.-A. U. office is kept open day and night, and is operated by about 12 day and 3 night men.

Mr. A. G. Wallace takes charge of the office at Front and Chestnut streets, one of the most important branch offices in the city, vice Mr. John C. Benckert, resigned. Mr. David A. Curl remains at "C. D." (307 Walnut street), where he has done such yeoman service for years past.

The position of transfer agent, made vacant by Mr. Garwood's change, is abolished. The money order department has been placed in charge of the cashier, Mr. Jamison, who will have for his assistant Mr. Joseph Kenney, late cashier of the American Union Company.

This entire system is under the supervision of Manager Jones. Mr. Jones, though a very young man, has made a long and honorable record—as an operator unexcelled in judgment and skill, as an electrician, as the agent of the Associated Press, and as an able and indulgent executive officer. He has been continually at work, literally night and day, since entering the American Union service, July 5, 1879. This incessant labor was maintained even after he returned to the Western Union service in their Philadelphia main office, until now, under his fine discipline, it is the model office of the country. He is at present absent on a well-earned vacation, and will during his trip visit New Orleans and other cities in the South and Southwest.

The operating room loses one of its oldest standbys and most able electricians in the withdrawal of Chief George W. Porter, and while all rejoice at his promotion, and the wider field opened to him in Superintendent Zeublin's office, there is noticeably a feeling of regret at his departure.

Mr. Carley, late cashier, who has been for 30 years in the telegraph service, also leaves a void hard to be filled. He was private secretary to Mr. William M. Swain, when that gentleman was president of the Magnetic Telegraph Company, and has always stood high in the estimation of each succeeding set of officers. He resigns to establish himself as a member of the firm of John T. Vansant & Co., manufacturing silversmiths, in Philadelphia.

#### A New Species of Telegrapher.

BY W. L. ALDEN.

It was the birth of a child in this city last February with a peculiar pair of feet that led a devoted student of anthropology—a member of the Royal Development Society—to begin that remarkable investigation of the nature and habits of the telegraph climbers which has resulted in establishing the fact that we have a new species of man among us. The child in question—a boy—had on the inside of each foot, and at a distance of two and a quarter inches in a southerly direction from the inner shoe-string, a sort of horn, two inches long, half an inch in diameter at the base, and tapering to a sharp point. The resemblance borne by this extraordinary natural spike to the iron spike worn by the professional climber of telegraph poles, and the fact that a telegraph climber was the father of the child, suggested to the anthropologist that here was a wonderful illustration of the theory of development, and led him to make the first thorough study of the telegraph climbers that has ever been made.

The existence of the professional telegraph climbers has been known for many years, though the first mention of them by any scientific authority occurred in 1870 (*cf.* Harkness' monograph on "Poles; Geographical, Hop and Others"). The telegraph climber, who may now be almost daily seen in this city, resembles an ordinary man in appearance, with the exception that he wears spikes in his shoes, which enable him to climb telegraph poles with great ease and

rapidity. Most people pay no attention to a climber unless they happen to see him in the act of running up a pole, or unless he drops a hatchet or other heavy tool on their heads, and they will learn with surprise that in the course of the last ten years he has undergone a most extraordinary and interesting development.

We learn from the investigations of the anthropologist already mentioned that the telegraph climber is shy and silent. When on the surface of the ground he walks awkwardly, and hence, in order to avoid attracting attention, he rarely, if ever, walks along the street except under cover of darkness. This assertion may seem novel at first glance, but if the reader will reflect for a moment he will probably be compelled to admit to himself that he has never seen a climber in any other situation than that of clinging to the upper part of a pole or of leaning quietly against a pole while standing on the sidewalk. That the climber never speaks, but communicates with his kind solely by signs, rests wholly upon the assertion of the anthropologist, but there is really no reason to doubt the truth of the assertion. He may not have entirely lost the power of articulate speech, but that he should lose it is what might be expected in view of his isolated life among the lofty telegraph wires.

The telegraph climber never sleeps in a house or on the ground. At nightfall he seeks a convenient perch on the cross-bars of a telegraph pole, where he slumbers till morning with his arms clasped around the body of the pole and his spikes driven into the back of the cross-bar. The position is a very peculiar one, since the climber's legs are doubled backward so that his feet are in close proximity to his back; but it is also a very secure one, and no instance of a climber losing his hold and falling on the head of a midnight drunkard has been reported. The favorite poles for sleeping perches are those on the Battery and in some of the small city parks, where the foliage of the trees partially hides the sleeping climbers. They are, however, safe from observation, since no one thinks of gazing upward toward the top of a telegraph pole after dark.

A tendency to construct nests among the telegraph wires has been noticed in several instances. The investigator found a climber's nest on the top of a pole in the Central Park and another on the top of a pole near the Palisades. These nests were little more than rude platforms of boards covered with straw, but in each case the nest was occupied by the mate of the climber with a family of young climbers. Usually, however, the climber makes his nest on the roof of some high building over which the telegraph wires pass. Thither he stealthily carries straw and bits of old canvas, and in these quiet retreats, far above the predatory boys of the street and the too-curious policeman, he rears his young, who, with their mother, never descend to the street. The young male climbers learn to climb from house to house and from pole to pole by means of the wires, and on reaching maturity join the adult climbers in their daily occupations. Of the food of these curious people the investigator was able to learn nothing with certainty, but he is inclined to believe that they have forgotten the use of fire and that they take their food whatever it may be, uncooked.

There is every indication that the telegraph climber is gentle and inoffensive, and that when he drops a hatchet or a glass insulator on an unfortunate pedestrian it is by accident. Whether the development of this singular species, which the able anthropologist has named *homo perticensis*, can be called progressive, or whether it is retrogressive and in the direction of the aboreal *quadrumana* is a question which every evolutionist must decide for himself. The opinion of the anthropologist himself is that the telegraph climber is a new species of man adapted to meet the conditions of telegraph poles, and that if we admit the telegraph to be an improvement upon earlier means of communication we must consider the climber as an improved man. It is possible that this argument is not as forcible as it seems, but the fact that a new species of man has been developed, and that this species is well worth the study of all believers in the theory of development, will hardly be denied. The report of the anthropologist's investigation, which has as yet been printed only for private circulation



will soon be issued by the Royal Development Society, with the imprint of the well-known London publishers, Shortmans & Co., and will then be readily accessible. Until then he has modestly decided to keep his name, as far as possible, out of the papers.

#### Presentation to Mr. Dealy in England.

Mr. W. J. Dealy, who has been in England since last June selecting offices, organizing staffs, etc., in that country, for the American Telegraph and Cable Company, was the recipient, before leaving London to return to New York, of some handsome souvenirs from the staffs of the London and Penzance stations.

Mr. Dealy's passage had been secured for the Wisconsin, sailing on the 22d, but, owing to a sudden call from headquarters, he was using every effort to obtain a berth on the Arizona, sailing on the 15th. On the 14th the metropolis was visited by a terrible gale, which caused great destruction of property and loss of life. Telegraphic communication was entirely stopped, poles being blown down in all directions. On this account Mr. Dealy desired to start for Liverpool and see if a stray berth could be procured at the last moment.

At 6 P. M. on the evening before he left, the full London staff—with the exception of Mr. J. Ball, who has been in ill-health since his return from New York, and was then lying ill in bed at his home in Birmingham—mustered at the office at 21 Royal Exchange, and Mr. Dealy having been sent for from the executive offices in Gresham House, was surprised to find them waiting for him. He said he was glad to have the opportunity, and commenced saying "good bye," but was stopped by Manager H. E. Robson, who said that, excepting to himself, Mr. Dealy had arrived a perfect stranger to all those who were now around him; yet, as he was about to return to America, those who had been so short time ago strangers to him could not let him go without some slight token of esteem. His genial manner and kindness of heart—all so foreign to many they had as superiors—made them feel that they were parting with a friend of long standing. Mr. Robson said he had a second pleasing duty to perform on behalf of the Penzance staff, who also desired to show their appreciation of the sterling qualities inherent in the true gentleman, and though they regretted that they should not see him before he left England, they sent their farewell in the shape of a letter signed by the whole staff, and deputed him to select and present their souvenirs.

After some further remarks, in which Mr. Robson said that, having had the pleasure of nearly twelve months' acquaintance with Mr. Dealy in America, where he was liked and esteemed by all, he was not surprised at the feeling exhibited by the Englishmen toward one who could show consideration for and treat those who were his subordinates as men, he concluded by saying that the peculiar troubles which seemed to reach all new cables had reached their's particularly early, and though they were having an enforced time of leisure he trusted that when once the A. T. & C. Co. was in active operation those selected by Mr. Dealey on this side would be found ready and able to handle the rush of business they all desired. They hoped they should meet him again, and that he would always be able to look back with satisfaction on those he had banded together under the American shield in England. Mr. Robson then presented Mr. Dealy, on behalf of the London staff, with a box of Havana cigars, to assist in whiling away the tedium of the passage; a meerschaum cigar holder and Morocco leather cigar case, bearing the inscription in gold letters: "Presented to W. J. Dealy by the London staff of the A. T. & C. Co., Oct. 22, 1881," and on behalf of the Penzance staff with a splendid black calfskin, silver-mounted, illuminated album, bearing the inscription on a silver shield: "Presented to W. J. Dealy by the Penzance staff of the A. T. & C. Co., Oct. 22, 1881," and a silver watch case, with the monogram, "W. J. D." Had time permitted they would have sent their *cartes* for insertion in the album, but he could be assured these would follow at no distant date, and on behalf of the two staffs he wished Mr. Dealy, after four months' sojourn in the old

country, which he hoped had been pleasant, a safe, speedy and pleasant passage, and a happy family reunion.

Mr. Dealy, who was greatly affected, said that the occasion being a thorough surprise he thanked them. Here he broke down, and said he could not speak, but would have to write his thanks.

#### The Beginning of the Telegraph.

The practical problem with Mrs. Dods was "to find your hare." The practical problem in electricity is, if not to find your force, to keep your current. It ceaselessly aims at flying from you, losing itself in the air, in the earth, being diffused, dissipated. The ancient Greeks, by rubbing amber or electron (which has left its record very clear to all time in the word electricity) got a kind of current; but they could not catch it properly and tie it to a wire as we now do; and the aim of scientific men has been, and still is, the search for the most effectual means of tying the current to the wire, or finding the most efficient insulators. And as it is throughout the whole world of nature, so it is here. As the old divine eloquently said, "All things are set over against each other and there is nothing single or separate." When you have once chained your current well enough, by an inevitable law it generates another. One of the greatest discoveries of Faraday—that most patient, imaginative, and self-denying of investigators—was that, if a current of electricity passes from a battery along one wire, it develops a current along another and passive wire stretched near it. When Faraday's wonderful discovery of the generation of a current of electricity in a passive wire stretched near a charged one had led to the discovery of relays, new possibilities for telegraphy seemed to be opened on all sides, and these do not seem even yet to have been practically realized even remotely. But to enable the reader to realize even faintly the high point which telegraphy has now reached, we must take a hurried glance at the development of the system from the beginning. The assertion is certainly fully justified that the first great step in practical telegraphy was made when the true function of a wire in maintaining a current and producing a signal at the end was clearly grasped. Oddly enough, the first realization of this seems to have fallen to a Scotchman. In the *Scots' Magazine* for 1753 we find record of an "expeditious method of conveying intelligence" described under the initials C. M. There is some doubt now as to who this C. M. was. Sir David Brewster says that he was a Greenock man named Charles Morrison; others give his name as Charles Marshall. Be that as it may, C. M. had caught a vision of the great goal. He aimed at the complete insulation of the conducting wire, and producing a signal at the end of the wire which should be visible and intelligible. He did not attain to the next step of producing many signals by one wire; he used a separate wire for each letter of the alphabet. But the principle in his case was clear—he telegraphed. The little that is known of him may be given in the words of an elderly Scotch lady, who remembered a "very clever man of obscure position who could make light write and speak, and who could light a room with coal-reek." It was a considerable time before the idea clearly dawned on electricians that one wire and needle could be made to represent several letters of the alphabet. When, by slow degrees, the wires and needles had been reduced to the lucky number five, we may say that a great step in the needle-form of telegraphy has been inaugurated. It was by means of one of these five-needle instruments that the capture of the notorious Tawell, the Quaker murderer, was effected, and a quaint incident is told in connection with it which fixes it the more firmly in the memory. In spite of its five needles the instrument could not make the letter "q," and but for the ingenuity of the telegraphist, who spelt the word "Quaker" "Kwaker," the murderer would in all probability have escaped. But five-needle instruments, useful as they proved in those days, are now looked upon by practical telegraphists as odd specimens of antiquity. It took nearly a whole century from the date of C. M.'s somewhat rude invention to make the next fruitful and definite step. Then it was that Messrs. Cooke and Wheatstone introduced what is known as the double needle

telegraph. On the night of June 25, 1837, it was subjected to trial by wires stretched from Euston Square to Camden Town. At the one end stood Mr. Cooke, at the other Prof. Wheatstone. "Never," says one of the inventors, "never did I feel such a tumultuous sensation before as when, all alone in the still room, I heard the needles click, and as I spelled the words I felt all the magnitude of the invention, now proved to be practical beyond all cavil or dispute." The double needle telegraph held its own with considerable distinction for many years, and even now at many of the smaller post-offices and on most railways its lineal descendant is to be found in the handy single needle instrument, which is electrically and mechanically just a double needle cut in two.—*Fraser's Magazine*.

#### What the Doctors Say about the Blanchard Foods.

NEW YORK, Nov. 1, 1877.

From the practical tests I have given the Blanchard Foods, I think they will prove of great value to the invalid, and they should be thoroughly indorsed by the medical profession.

EGBERT GUERNSEY, M. D.,

18 West Twenty-third street.

NEW YORK, Oct. 17, 1877.

I have prescribed the Blanchard Foods to a large number of my patients, with good results in the great majority of cases. As many pretentious "medicinal foods" had proved unsafe in prolonged administration, I hesitated to sanction the use of these until assured of the honesty of the preparations and claims of Dr. Blanchard. I have seen their beneficial action upon persons exhausted by mental strain, wasting disease and by the insufficient nourishment of extreme poverty, thus proving them truly a Food Cure. Until dietary laws are fully understood there will be need of nerve foods, and we must of necessity avail ourselves of the labors of men who devote time and labor to the preparation of such valuable helps to the invalid.

JAMES ROBIE WOOD, M. D.,

62 West Seventeenth street.

NEW YORK, Nov. 26, 1877.

DR. V. W. BLANCHARD: During the past year I have prescribed your various preparations of Food Cure, and feel happy to say they have met my most sanguine expectations, giving to patients long enfeebled by blood poison, chronic disease or over drug dosing, the needed nutrition and nerve force.

PROF. CLEMENCE S. LOZIER, M. D.,

Dean of Hom. Med. College and Hospital for Women, New York City.

ANDOVER THEOLOGICAL SEMINARY, }

ANDOVER, MASS., March 29, 1878. }

Your Life Food is an excellent thing. I have no hesitation, after a thorough trial of it, in recommending it in cases of chronic dyspepsia and nervous prostration.

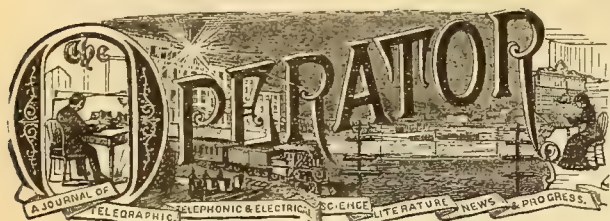
REV. DR. AUSTIN PHELPS.

—Advt.

#### Linemen Affording Interest to the Crowd.

Anyone who has noted the vast crowd which the hoisting of a large safe into the third story of a building will bring, and the apparently intense interest which it creates, will hardly be surprised that the mysterious operations of the linemen are equally as interesting to the great body of humanity. According to the *Baltimore News*, the amount of entertainment that can be extracted from a telegraph pole by an average Baltimore audience is perfectly marvelous. A fair illustration of this has been given for several days past on Baltimore street. The digging of the hole elicited intense interest from an immense crowd, who manifested the same eager attention at every hole that was successively dug. A lofty female dancing a can-can would not have riveted the masculine gaze more intently than did each pole as it went end upward toward the perpendicular. No time was lost by the breathless gazers. A hasty lunch or no lunch at all, a minute inspection of each pole and a casual one of the workmen's lunch basket at midday, was all that interfered with the rapt admirers from the rising of the sun unto the going down of the same. The punctuality of the crowd, too, testified to their keen enjoyment. We do not believe that one of them missed a pole, which argues well for the relish of the mob and the interesting character of the performance.





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W. J. JOHNSTON, Editor and Publisher.

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Subscribers desiring their addresses changed, should give the old as well as the new address.

### THE MUTUAL UNION.

The hope which was cast down on the 19th of January last, with the sudden collapse of anything like opposition to a telegraphic monopoly, is revived with the opening, within nine months, of a real, live enterprise—the Mutual Union Telegraph Company. Progress rarely goes in a straight line, but its apparent deviations only emphasize, as in this case, its irresistible onward motion. It is so with the telegraph, and the despondency which set in immediately after the Consolidation now clears away to reveal a broader and wider field for the Telegraph. The experience of the past half year has shown us that capitalists are always ready to open their purses to further a solid telegraphic enterprise; that a level-headed man can always obtain for the simple asking all the money he wants to build an opposition line; that a telegraphic monopoly is really an impossibility in this country, and that the saying is true that, "The necessity of the telegraph itself is the unconquerable antagonist of monopoly."

The construction of the Mutual Union has been rapid, but it has been done in a business-like way. That is its first step well taken; the next step forward has been secured, and it is, we hope, now going steadily on to its day of triumph. Within another year it will include nine-tenths of the profitable telegraphic business of the country; its comparatively small capital must be very profitable, and it cannot fail soon to pay a handsome dividend upon its authorized capital of ten million dollars.

Business can be better captured and retained by rendering efficient service than by reducing rates. Prompt dispatch secures increased business, and where better facilities are afforded to the public it increases trade. A commercial message, even one charged for at a higher rate, promptly delivered, will often make it necessary for the merchant to send three or four other messages. Complaints lately from the various exchanges in this city have demonstrated that the facilities between the East and the West are not adequate for the prompt transmission of business during that fraction of the day called "business hours." Business can thus be cultivated, and in doing this we may safely trust the executive officers of the Mutual Union Telegraph Company.

THE interesting account which we give in this issue of the attempt of an operator to swindle the Erie Railway out of \$55,000, will recall some of the big schemes attempted of late years by a new class of swindlers, who practice the tele-

graph confidence game. These reminiscences should be widely circulated, as a means of putting the general public on its guard. On the 12th of August, 1865, one T. F. McCarthy brought the following message to the Western Union office at Titusville, Penna.: "Keystone Bank Company will pay on checks of T. F. McCarthy to the amount of \$20,000 (signed) Keystone Bank." On the strength of this dispatch, and one or two supplemental ones, Mr. McCarthy got his check cashed for \$10,000, disappeared and has never since been heard from. Another neat and successful job was carried out at Pittsburgh, Penna., March 13, 1877, by an operator calling himself Brooks. He tapped the wire near Templeton, and with the aid of a pocket instrument sent a message to the express messenger on the Buffalo express south, informing him that he (the messenger) was relieved, and ordering him to turn his car over to J. H. Brooks at Templeton. This was signed with the superintendent's name. At Templeton "Brooks" was on hand, obtained possession of the express car, and, when the train reached Pittsburgh, walked off with a snug pile—between \$5,000 and \$10,000—and was never again heard from. A few years ago an operator named Charles Crowley sent a forged message to the Bank of California, calling for \$1,200, went down and drew it himself, and walked off into total obscurity. Every one remembers the raid on the stock market made a few years ago by a bogus message announcing the death of Commodore Vanderbilt. Minor swindling schemes by use of the telegraph are too numerous to mention. But, so far from reflecting upon the profession, these robberies emphasize the probity and uprightness of the average operator, into whose hands so much is intrusted and to whom daily temptation to such rascality is placed in his path. The only wonder is that with the encouragement given to every Tom, Dick and Harry to learn the mysteries of the profession, and the beggarly "salaries" offered to some naturally bright young men, the Pennsylvania Railroad paying its operators \$29 per month, these easily executed robberies do not oftener occur. It is an argument against the indiscriminate admission of candidates to our profession, and in favor of our plan for placing some restrictions upon the manufacture of operators in the matter of the moral character of the student as well as his general intelligence and adaptability.

THE cost of electric lighting in this city, as compared with the cost of lighting the same open spaces by gas, has recently been investigated by the *Sanitary Engineer*. The Brush Electric Light Company receives \$7,400 per annum for lighting Fourteenth street from Fourth to Fifth avenue, Fifth avenue and Broadway from Fourteenth to Thirty-fourth street, and the latter street from Fifth avenue to Broadway. In addition to the lights on these streets the company is required to furnish two groups, of six lights each, in Union and Madison Squares, respectively. The street lamps have been in operation several months, those in the squares for a shorter period. The illumination is said to be fairly satisfactory, though, as was anticipated, the tower lights are effective only upon a small area, and it is likely that their effect will be seriously impaired by the heavy foliage in summer time. The total number of gas lamps which it has been possible to extinguish by the substitution of electric lamps is 430. The city formerly paid \$17.50 per lamp per annum, which is estimated to have been at the rate of about \$1 per

thousand cubic feet, net, and this rate was so low that the gas companies did not care about lighting the streets. The gas lights, therefore, cost the city (and probably the producer) \$7,525 per annum, and are replaced by the electric light at a cost of \$7,400. It is not known, however, whether the Brush company makes or loses money at this rate. The advertisement alone is worth something, and it is possible this was taken into account in making the contract. At all events, there seems to be very little margin of difference where gas is furnished at one dollar per thousand cubic feet. This, however, is only one-half the cost of gas to private consumers in this city.

THE demand for good operators, consequent upon the rapid increase of the opposition to the Western Union, is on the increase, and good operators are scarce. But, unfortunately, the average economical manager is not in search of good operators as much as cheap ones. Of this class—men who can just worry through a day's work without wrecking the company's reputation—there is a glut; and those who are familiar with the great number of "operators" being constantly turned loose, from the so-called colleges will see that we sound no false alarm when we say that some restriction should be placed upon the wholesale manufacture of this kind of operators. The next consolidation, or a decline in the present unprecedented volume of business, will place a good many men in enforced idleness. In view of this fact, it becomes the duty of every telegrapher who has the welfare of his profession at heart to use all his influence to defeat this overcrowding of our ranks by cheap and incompetent men. Not much is to be expected from the average manager, but there are still some of that class of officials who have themselves toiled at the key for years, and who bear still some of the old fellow-feeling, who will enter into the spirit of this laudable enterprise.

It would seem that those worthy young men, mostly telegraphers, comprising the sergeants of the Signal Service, are not being fairly treated by the War Department. The law requires that two of these sergeants may be appointed every year to be lieutenants in the regular army, but the law has heretofore been woefully neglected, and favorites in the regular army have been assigned to easy berths in the Signal Service, thus closing the door of advancement to the regular Signal Service men, and preventing them from rising above the rank of sergeant. Gen. Hazen, Chief Signal Officer, stoutly maintains the claims of his men, while Secretary Lincoln and General Sherman are found in favor of the carpet-knights. Now, if Gen. Hazen will at once name two worthy sergeants for promotion to the rank of second lieutenant, he will not only do a meritorious act, but will also bring the squabble to a crisis. The efficiency of the Signal Corps demands that this law with regard to promotions be scrupulously fulfilled, and common justice demands that the worthy men forming the Corps should receive the commissions for which they have worked so hard.

ONE J. Howard Welles has been arrested in this city for threatening to shoot Jay Gould. In his tender epistle to Brother Jay he says. "You must undoubtedly be aware that you have been a rogue of the first water all your life, that through your artful cunning and deception you have robbed thousands of people of their birthright. You have had no mercy.



You have robbed the rich and the poor, the father and the fatherless, the widow and the orphan, indiscriminately of their last dollar, and through your villainy have brought ruin and destruction on thousands of families. All this you have done under a cloak by circulating false reports, bribing newspapers, making false statements, committing perjury, and by artful cunning and deception. \* \* \* The Lord has applied to me in a dream and requested me to slay you as a public necessity, and I have sworn and taken a solemn oath before the all-living God that I will put you to death." Mr. Gould, however, is still alive, and Mr. Welles languishes in the Tombs.

At the late meeting of the Iron and Steel Institute, England, Dr. Siemens showed how steel could be economically melted by the electric arc. An ordinary plumbago crucible is placed in a metallic jacket or case, and the intervening space is filled up with charcoal or some other bad conductor of heat. Through the bottom of the crucible a rod of platinum or dense carbon passes. A hole in the cover of the crucible admits the negative electrode, which is suspended at the end of a beam by means of a strip of copper. The other end of the beam is attached to a hollow cylinder of soft iron, free to move up and down in a coil of wire, one end of which is connected with the positive and the other with the negative pole of the arc. Five pounds of steel were melted in 25 minutes.

GUIDED by past experience, the operators do not seem inclined to relax their vigilance in looking after their own interests. The attempt commenced last spring by certain Western Union officials to reduce salaries and to enforce gratuitous extra work was promptly checkmated by the firm stand made by the operators. The events of the two weeks just past show that none of this power, which resides alone in unanimity of purpose, is to be lost. So far there has been no exultation, no threats—every act of ours has been as quiet and dignified as it was determined and justifiable—and it only remains for THE OPERATOR to advise its readers, in their newly-found power, to foster the same spirit of self-control which has characterized their action heretofore.

A SENTENCE in our Philadelphia notes saying that that city, being in a central position, is frequently called upon to supply relays of operators to surrounding cities in emergencies, leads up to the question whether or not it would be advisable for the large competing companies here to organize a trained staff, the same as the "special staff" in England, to move at a moment's notice from town to town. Such a reserve force, composed of the flower of the profession, would be a valuable reinforcement whenever any particular office was hard pressed, and the experiment would, we think, be well worth trying in the Eastern States.

Two years ago, on the 18th of this month, the steamer Faraday arrived off North Eastham, Mass., and picking up the shore end of the new French cable, completed another link between the old world and the new. Mr. D. H. Bates was then President of the American Union, and we were all looking forward to an era of great telegraphic prosperity. In the short time intervening Mr. Bates has become Assistant General Manager of the Western Union, another new cable has been laid, another new domestic company has replaced the short-lived American

Union, and, altogether, telegraphic affairs have changed generally.

WE have received a number of pleasant compliments in reference to the appearance of our last issue. Many substantial ones, too, in the shape of new subscriptions, have also reached us. Our advertising friends, however, wishing to take advantage of the unprecedentedly large number of copies issued, rather crowded us with their favors on that occasion. It is well to remember, though, in this connection, that were it not for the revenues derived from advertising, THE OPERATOR of to-day could not be furnished for less than at least three times the present subscription price.

IF the visit of Prof. Siemens to this city shall result in the application of electricity to the running of trains on the elevated railroad, it will be a great boon to the property owners along the various routes, who will be glad to get rid of the smoke and the cinders. The Professor thinks that the use of electricity as a motive power would result in a saving of \$1,000 a day, and if this shall prove true, it will be also a boon to the company.

IF the Mutual Union Company still retains that \$250 which it claims was the bribe-money offered to one of its clerks by the Western Union, it certainly cannot conscientiously stick to it; and, since the Western Union will never claim it, it might be well to turn over the \$250 to the Telegraphers' Mutual Benefit Association. What does President Evans say to that?

THE felicitous results of the test, in Philadelphia, of Dr. Lugo's "solenoid" wire should be most encouraging to the advocates of underground wires, since it clearly demonstrates that the trouble dreaded from induction in subterranean telephone wires can be completely overcome.

Two more lunatics—Joseph Campbell, at Bluffton, Indiana, and Louisa Kelsey, at Celina, Ohio, have been married by telegraph, there being a minister and a wedding party at each end of the wire. "Mr. and Mrs. Campbell," the dispatch naïvely adds, "expect to meet some time next winter."

ANY of our readers of the Signal Service will confer a favor by sending us a list of the promotions in the Corps from sergeant to second lieutenant since the passage of the law providing for such promotions.

THE Western Union Telegraph Company shows public spirit in directing that all messages on business concerning the Garfield monument, at Cleveland, shall be sent free to all parts of the United States.

NEXT Thursday week, the 24th inst., will be Thanksgiving Day, and among all the professions and trades none has more reason to thank an indulgent and omnipotent Providence than the telegraphic profession.

OUR hearty congratulations are extended to the Mutual Union Telegraph Company upon its auspicious opening. May it do better than that monstrous fizzle—the American Union!

THERE is in the Paris Electrical Exhibition an induction coil capable of giving a spark forty-two inches long and piercing a block of glass six inches thick.

### Important Tests With the Telephone, Telegraph and Electric Light Wires Underground.

Cables were placed in the conduits recently laid down by the National Underground Electric Company, on Market street, Philadelphia, and on Saturday, Oct. 29, a most successful and interesting exhibition was given, in the presence of a large number of electricians and Philadelphia, New York, Boston and Chicago capitalists. The cable was doubled so as to represent a straight length of two and a half miles. Five wires were in use—three for telegraphic and two for telephonic purposes. In addition to these there was an electric light wire run from the dynamo-electric machine at Wanamaker's Grand Depot to the place where the exhibition was given, the new Public Buildings, Broad and Market streets.

The most important part of the test was the clear manner in which it was demonstrated that subterranean wires can be used for telephonic circuits equally as well as for the telegraph, the trouble heretofore experienced from induction having been completely conquered. This was accomplished by the use of "Solenoid" wire—the invention of Dr. Orazio Lugo. This is a double wire—one straight insulated wire about and around which its companion wire, also insulated, is wound spirally. In accordance with the principle discovered by Dr. Lugo, all induction is neutralized in this way.

At a private inspection on the previous day, Mr. Joseph Christie, of Philadelphia, under the guidance of Mr. J. F. Shorey, of Boston, made a critical survey of the entire system, descending the "man-holes" in the street, and applying the severest tests to the solenoid wire, and gave it as his opinion that the invention of Dr. Lugo is perfect in overcoming induction. A telephone attached to an ordinary wire gave forth all the bewildering crackling sounds, and the word "ship," written on a neighboring Morse circuit, was, through induction, plainly read by sound on the telephone. The same telephone, detached from the ordinary line wire and attached to Dr. Lugo's solenoid wire gave no sign of induction.

The same experiments were repeated next day at the public exhibition, and so clearly that the utility of the solenoid was apparent to even those not familiar with the subject. But its value was best demonstrated by the test of placing an electric light wire in close proximity to the telephone, and thus showing an entire absence of induction. The solenoid wire running from the dynamo-machine in the Grand Depot to the carbon points of the electric light in the room where the exhibition was given was coiled to the length of one mile, and placed on the top of a similar length of telephone wire, the two coils being separated only by a sheet of paper. With a strong current from the dynamo-machine running through one coil, there was no induction perceptible in the other, and a whisper on the telephone was plainly audible through it.

Lucid explanations were given by Dr. Orazio Lugo and Frank L. Pope, of New York, and J. F. Shorey, of Boston.

There were present James Gamble, General Manager of Mutual Union; John E. Zenblin, Superintendent of the Western Union; Gen. J. H. Wilson, of Boston, President of the New York & New England Railroad; David Brooks, James Partrick, Henry Bently and William B. Gill, of Philadelphia; S. L. M. Barlow, George L. Phillips, of the American Bell Telephone, Boston; T. E. Cornish, Manager, and W. D. Sargent, General Superintendent Bell Telephone, Philadelphia, and many others.

After the exhibition, the Board of Directors of the Underground Electric Telegraph Company held two meetings in Philadelphia to consider propositions presented by the New York representative of the Mutual Union Telegraph Company for the rental of a portion of the company's conduits which are now being laid on Market street. It is believed that satisfactory terms, which have not been made public, were agreed upon.



## THE POETRY OF WORDSWORTH.

Elsewhere is announced a new edition of the poems of William Wordsworth. In this country, as in England, the poet of Nature is steadily gaining in popularity. As a rule, the age of newness and curiosity being passed, every fresh reader becomes a friend and admirer of such poetry as his, which "wears well." Those who have once taken a drink from the pure, cold fountain of Wordsworth's inspiration will often return thereto, to cool the heat of life's fever. The writer remembers his first introduction to the greatest poet of the century. He was a school-boy then, under a preceptor of a just literary taste, who permitted him to know what were the books at the time engaging his attention. At the epoch referred to—for it proved to be an epoch in the individual history of him who pens these words—a volume of Wordsworth's Sonnets was among the literary treasures on the master's desk, and the pupil read the divine apostrophe to Milton:

"We are selfish men;  
Oh! raise us up, return to us again;  
And give us manners, virtue, freedom, power.  
Thy soul was like a star, and dwelt apart;  
Thou hadst a voice whose sound was like the sea:  
Pure as the naked heavens, majestic, free,  
So didst thou travel on life's common way,  
In cheerful godliness; and yet thy heart  
The lowliest duties on herself did lay."

These words placed one more disciple at the feet of a prophet who perceived and felt above all others the deep harmonies of Nature—their power to soothe and heal, to chasten and subdue the passions, to refine and to endow with an abiding happiness. From that time to now, every day spent without some companionship with Wordsworth has seemed to be, for this reason, an imperfect one.

No poet is more tenaciously admired than Wordsworth, and no poet has been the subject of more flippant criticism. The distinction between "is" and "has been" in the preceding sentence is one well considered. Wordsworth's poetry has survived the attacks of small wits, and is ranked among the best which gives an unmatched distinction to English literature. The critic can now write Shakespeare, Milton and Wordsworth as the greatest names in English verse, and his judgment is not the subject of a sneer. Fifty years ago this estimate, which is extensively and increasingly accepted, would have been received with surprise, if not with contempt. Wordsworth's poetry has proved like gold tried in the furnace.

Admitted that Wordsworth, like the most of people, had a crotchet. His earlier poems were distinguished by an affectation of simplicity as to subject and style, which his ingenious defense thereof failed to justify. But his genius survived an inconsiderable weakness of its immaturity. The English language has rarely reached such copiousness and majesty of diction as in many passages cullable from the works of the Lake poet. For example:

"Within the soul a faculty abides,  
That with interpositions, which would hide  
And darken, so can deal, that they become  
Contingencies of pomp, and serve to exalt  
Her native brightness. As the ample moon,  
In the deep stillness of a summer eve  
Rising behind a thick and lofty grove,  
Beams like an unconsuming fire of light  
In the green trees; and, kindling on all sides  
Their leafy umbrage, turns the dusky veil  
Into a substance glorious as her own,  
Yea, with her own incorporated, by power  
Capacious and serene—like power abides  
In man's celestial spirit; Virtue thus  
Sets forth and magnifies herself; thus feeds  
A calm, a beautiful and silent fire  
From the encumbrances of mortal life,  
From error, disappointment—nay, from guilt;  
And sometimes, so relenting Justice wills,  
From palpable oppressions of despair."

The enthusiasm of a steady admirer is perhaps excusable, even when it leads him to deprecate the omission from any edition

of Wordsworth's works of the poems which so wonderfully exercised the pleasantries of certain critics upon their first appearance. There must be more than their simplicity to account for the wonderful popularity of "We Are Seven," "Lucy Gray," "The Pet Lamb," and other early pieces printed and beautifully illustrated in the edition suggesting these remarks. The truth is that their deep undercurrent of thought and feeling influences the popular judgment beyond the carplings of verbal critics with their musty precedents. While "Tintern Abbey" and the "Ode on Immortality" are, of course, infinitely out of the reach of petty criticism, the detractors of Wordsworth should remember that the early poems survive and are published with the unquestionably immortal efforts of his muse. Dear to the universal heart is the doctrine of the survival of the spirits of the dead in another condition of being, and of their sweet kinship with the dear ones left behind but destined to rejoin them in a better life.

"But they are dead: those two are dead,  
Their spirits are in heaven!  
'Twas throwing words away: for still  
The little maid would have her will,  
And said: 'Nay, we are seven.'"

Moreover, the choice spirits of all ages have been touched with the same sympathy expressed with simple beauty in "The Pet Lamb." Burns saw in the field mouse "a poor earthborn companion and fellow mortal." These remarks could be extended further. The claim is not made that Wordsworth never flags or fails, but all that he said has a feeling and a purpose, is grounded on a conviction or a sublime perception which the least dignified expression cannot injure or impair. Moreover, peculiarities which those who do not know and love the poet cannot tolerate, are an interest and a charm to those who companionate with him day by day.

Wordsworth is a personality throughout his poems. He lays bare his innermost thoughts, his deepest feelings. His poems are in this sense egotistical. Their author was not destitute of dramatic ability, as some critics say. The skeptic in the "Excursion," for example, leaves on the writer's mind an impression that his personality is entirely distinct from that of Wordsworth at any period of his life. There is not, to his knowledge, any proof against the presumption that the skeptic is as real a creation as Shakespeare's Hamlet.

A word should be said in commendation of Wordsworth's style. He is eminently scholarly and precise in his employment of language. For this reason, if for no better one—but a better would soon follow—our young people should be encouraged to study his works among those of other masters of the language. In these busy times a correct use of English is most desirable. Comparatively few persons attain this capability, and the statement of one aid thereto may be of service.

This brief review, necessarily incomplete, will, perhaps, answer a useful service as introducing a superb volume which the publisher has produced in time for the holiday trade of the present year. It contains poems of William Wordsworth, edited with an introduction by Richard Henry Stoddard. This feature of the edition gives it a special interest to the numerous admirers of Mr Stoddard, himself no inconsiderable poet, and whose remarks will be found of great value as a piece of criticism. They are discriminating, just and learned, and give an American character to the book which is pleasing and satisfactory to those who desire the development of national scholarship and literary taste, and give them encouragement.

The publisher feels that in presenting this superb book to the attention of the public—a book, by the way, always opportune as a gift, a valuable accession to the library and the home, and the pure instructor and solace of many hours to every appreciative possessor—he is making an experiment for which he can confidently predict success. The poet, the editor and the publisher has each done his part; and now, gentle reader, it only remains for you to do yours.



## Notes and Queries on Electricity and Electro-Magnetism and Their Applications.

BY T. D. LOCKWOOD.

Practical as far as possible;  
Theoretical as far as necessary.

In our last answer, an error crept in, which, by the omission of the decimal point before the figures 35 and 21, materially changed the sense of the words. We therefore repeat the entire answer:

Q. 158. Does the resistance of wire vary with the temperature?

A. Yes; the resistance of all wires increases with increased temperature, and the resistance of nearly all metals increases at the same rate, iron and thallium, according to Dr. Matthiesen, being the only exceptions. From the tables given by Latimer Clark, we learn that the resistance of iron wire increases about thirty-five hundredths (.35) per cent. for each degree Fahrenheit, and that the resistance of copper increases as the temperature rises twenty-one hundredths (.21) per cent. for each degree.

It is also ascertained in the resistances, which increase with increased temperatures. The rate of increase is not reckoned all through on the original resistance, but is, as it were, computed in the same manner as compound interest on a sum of money. For example, if we have a wire which measures 100 ohms at 60° Fahrenheit, and the resistance be increased by a certain amount by a rise of one degree in temperature, it will be increased by the next degree of rise at the same rate per cent., calculated on the original resistance, plus the amount increased by the first degree of rise.

Q. 159. The diameter of any iron wire being given, how may the weight per mile be ascertained?

A. If we know the diameter of any size of iron wire, in mils., or thousandths of an inch, we may find the weight per mile by dividing the square of the diameter in mils. by the steady number 72.15.

For example, we have a No. 12 iron wire, and wish to find its weight per mile. It is, we will suppose, 109 mils. in diameter. The square of 109, or 109 multiplied by itself, is 11,881. Dividing this number, 11,881, by 72.15, we find the quotient to be about 164½ pounds, which is the weight per mile.

The weight of copper wire is found in the same way, substituting 63.13 for the steady number 72.15.

Q. 160. What metal is usually employed for the conducting wires in underground work, and what materials are chiefly used in insulation?

A. Copper has always been used as an underground telegraph wire, to the exclusion of all other materials; and the most generally employed size is No. 18, covered with gutta percha till it reaches the size of No. 7, B. W. G. In England these wires are wrapped with strong cotton tape, and saturated with Stockholm tar, and drawn through and into leaden or iron tubes, which are then buried. The insulating material has been much varied. Gutta percha and India rubber are, however, the principal materials used at the present day. Almost everything has been tried, but gutta percha has, upon the whole, given the best results when it has been kept from air and insects. Kerite has given satisfaction, and is much used in the United States.

Q. 161. Are covered wires ever used on house-top lines?

A. Yes; in cities, particularly among the centres of business, it becomes almost a necessity to employ covered wires, on account of the great number of wires which cross and recross each other in every direction.

In New York, for example, the Gold and Stock Telegraph Company invariably uses rubber-covered or kerite line-wire, and many troubles of a minor character, to which its lines would otherwise be peculiarly liable, by reason of the high tension currents employed on printing circuits, are thus prevented or rendered innocuous.

Q. 162. When was the first underground telegraph laid and by whom?

A. The first underground telegraph line ever laid was that of Mr. Francis Ronalds, an English gentleman, in the year 1816. He invented a telegraph to be operated by synchronously moving dials, in conjunction with the employment of

static electricity, and worked it over a wire five hundred and twenty-five feet long, which was laid in a trench dug in the earth for that purpose. The wire was placed in tubes of thick glass, and these were laid in troughs of dry wood, two inches square, the troughs being filled with pitch. Mr. Ronalds was a strenuous advocate, at that early day, of underground telegraphs.

Q. 163. Are underground wires at present laid to any great extent, and where?

A. Underground lines are extensively employed in some of the cities of England, and, as constructed, appear to work well. Several long lines are also in use, notably one between Liverpool and Manchester, a distance of about 36 miles. More than 100 miles of piping is laid down in England, and over 3,000 miles of wire.

In Germany, also, there is an extensive underground system, which, instead of consisting, like the English lines, of a large number of wires laid in pipes, is similar to the system of submarine telegraphy; a number of wires are formed into a cable, which is served with tarred rope and armored with galvanized wire, after which it is laid in a trench, under the public roads or highways, and the trench is filled up with bitumen.

Many miles of cable are so laid, and the German government officials have been so well pleased with the operation of this system that they have lately extended its ramifications considerably.

Q. 164. Are underground lines suitable for telephonic circuits?

A. Underground lines, up to the present time, have not been used at all, or not to any extent, for telephonic purposes. There are several reasons for this. Among others, it has been generally supposed, from the too-evident fact that telephone wires, even when a comparatively long distance apart, interfere seriously with each other by the production of indirect currents and other disturbing agencies, that such wires, when laid together in a cable or tube underground, and therefore close to each other, would, owing to the increased vigor of such disturbing currents, be unable to work at all. Inductive embarrassment, that is, the retarding influence of the earth—which of course increases as the wires are brought nearer to the earth—would also have an objectionable effect on telephone wires, and considerably weaken the volume and intensity of the currents which reproduce the transmitted sounds. Remedies for both of these troubles will doubtless sooner or later be discovered. Indeed, many have already been proposed, and have met with more or less success.

The great objection, however, is the enormous expense contingent on a first-class and thoroughly well-constructed underground system, especially in a city system of short lines which have to be tapped at many points. The expense, though, would be nearly all first construction, as, when once properly laid, the wires would be secure from the effects of wind and weather.

Q. 165. What is the metal chiefly used as a conductor in submarine cables?

A. Submarine cables, from the first one laid, that between Dover and Calais, by Brett, in the year 1850, to the last Atlantic cable, have always been furnished with copper-conducting wires, generally in a strand of three or more wires.

### The Mutual Union Office in Boston.

To the Editor of The Operator:

SIR: Between Oct. 4 and 29 the apartment on the ground floor of No. 77 Milk street, corner of Federal, was transformed from a room entirely destitute of furniture—even to gas fixtures—into the finest and most complete telegraph office in Boston, if not, indeed, in New England, and this morning (Nov. 2) the first message was handed in over the elegant receiving counter, to be transmitted over the wires of the "amateur" telegraph company, as the New York *World* designates the M. U. Superintendent D. J. Hern has shown by his work here that his telegraphic experience has not been wasted, for he deserves the credit of the entire work.

The receiving and operating departments are on the first floor, in a room with a frontage of 23 feet on Milk street and 54 on Federal. The two departments are divided by a partition composed of an ash wainscoting, surmounted by

sashes of ground glass, reaching to the ceiling. Opposite the Federal street side the receiving room is divided by a wire screen from a passage way leading from the public room to the operating department. The receiving department is 8 feet deep, and is separated from the public room by an ash counter, with cherry facings, with a plate glass front some three feet in height, broken by two brass wickets, through which to do business with the outside world. Supt. Hern's desk is also in the receiving department. Mr. W. B. Derby is cashier and receiver, assisted by Mr. Martin Connolly. Mr. Hern is assisted in his office work by his brother, Mr. John B. Hern.

The operating department is a well-lighted apartment 31 by 28 feet, and contains eight quartette tables of the approved and improved Western Union style. The switch (which has a capacity for fifty wires) is a very handsome one, manufactured by J. H. Longstreet, of New York, who also furnishes all of the instruments. The relays do not infringe upon the famous Page patent and are the joint production, we believe, of Messrs. Longstreet and J. E. Wright, the electrician of the company. They have not been fully tried, as yet, in this vicinity, but if Mr. Longstreet has bestowed as fine work on them as he has on the switch, their success is assured. The switch frame is of black walnut, and has a substantial look about it which does not suggest consolidation. All of the office furniture (save the chairs) was manufactured by D. B. Chandler, of New York, and was placed in position under the personal supervision of his able assistant, Mr. Sage. The Harwood fibre-seated chairs have an air of comfort about them that is intensely refreshing. The operating force consists of Mr. F. Scott Smith, Chief Operator; Mr. Frederick A. Cloudman, assistant; and Messrs. Jas. H. Burke, J. H. Hutchinson, J. M. Sullivan ("Steve"), Thos. J. McCabe, Edward J. Holden, William Irwin and C. E. Lyman, operators—the latter two nights. William H. Murray and John B. O'Neil are check clerks. A drop tube runs from the operating room to the delivery department in the basement, presided over by Mr. John Corcoran, a veteran in this particular line of business. The delivery department comprises two rooms—one 22 by 11 feet, of which Mr. Corcoran is at present sole occupant; the other 22 by 15 feet, for the accommodation of the messengers. The drop tube from the operating department is arranged so that business will fall on the delivery clerk's desk, directly in front of him. He is separated from the messengers' room by a partition of window glass, arranged in sashes, reaching nearly to the ceiling. The stairway from the street leads into the messengers' room, and to the right of that is the battery room, 22 by 21 feet. The latter is complete in all its appointments. Four stands, with a capacity of 1,200 cells, are arranged so as to allow free access to each individual cell. Along one side of the room is a mammoth wooden tank capable of holding 120 jars, which will render the cleaning process a comparatively easy one. Under the sidewalk of Federal street are closets for battery material, old business, etc., one of them being set aside for the messengers, and containing hooks for their coats and compartments for their hats. The carpenter work on this floor, together with a fine coat-closet, containing 25 hooks, in the operating room, redounds greatly to the credit of Mr. Chas. Frizell, a Boston carpenter.

The wires are brought from the roof, through a well between the office and the adjacent buildings, by means of ten wire cables, and are carried through the basement up through the floor behind the switch. The wires from the switch to the instruments are strung along the ceiling of the basement inclosed in a box, so there is not a wire visible save where they come through the tables at the instruments. The work of running and connecting the wires was done under the direction of Mr. H. B. Potter, assisted by Mr. John Pratt, who are to serve in the capacities of lineman and battery man respectively.

Messrs. Burke, Holden, Sullivan and Hutchinson resigned positions in the Western Union office in this city to accept the situations they now hold. The first three gave in their resignations Oct. 14, to take effect in eleven days. When the matter was reported to Supt. Roche, he at once ordered that the resignations be accepted to take effect immediately, and had it not been for



the generosity of the new company, in placing the men on the pay-roll at once, these gentlemen would have been forced to take an involuntary two weeks' vacation, simply because they wished to better themselves. It is rumored that Supt. Roche issued an order that all resigning for the purpose of going with the opposition would be served in the same way; but, if this be true, three more resignations the following day caused him to revoke it. The indignation among the operators at 109 State street over this treatment was widespread. Some officials seem to regard the respect of their subordinates as something unworthy of an effort to obtain, but it is to be hoped that the day is not far distant when they may have occasion to repent of their shortsightedness. OBSERVER.

BOSTON, Mass., Nov. 2, 1881.

### Swindling by Telegraph.

William J. Sipple, an operator, charged with conspiracy to rob the Erie Railway of \$55,000, was discharged from custody on the 3d inst., but was immediately rearrested on a charge of trying to obtain money under false pretences. He was admitted to bail last week.

Sipple was formerly an operator on the Erie Railway. One night, about two weeks ago, a man, who has since been recognized as Sipple, entered the bell-house, and asked if Mr. Conklin, the operator, had gone. The watchman said that he had gone, whereupon Sipple took possession of the telegraph instrument. For the next two hours he had control of this end of the road. He ordered all stations east of Paterson to ground all wires except No. 1, the wire he was working on. The order was signed with the initials of W. J. Holmes, the superintendent.

Sipple then called Paymaster White at the main office in Jersey City, and in the name of General Bird W. Spencer, the Treasurer of the company, telegraphed him the details of an imaginary plot to rob the safe in the Paymaster's office of \$50,000, the dispatches purporting to come from Passaic. He said that the plot had been discovered by the New York police, who had taken measures to capture the thieves. In order to facilitate the operations of the police it was directed that all the cars be taken out of the depot, and that no trains be started without further orders from General Spencer. He also directed Mr. White to take the paper money out of the safe and put it in the bag, so that it could be carried to a place of safety in case the plans of the police failed. Mr. White obeyed the instructions, and telegraphed back that he had done so. He was immediately summoned to Passaic to confer with General Spencer, and started on the next train, first informing Superintendent Hill of the condition of affairs, and leaving the money in his care. When sufficient time had elapsed for Mr. White to reach Passaic, a dispatch, purporting to come from him, was received by his clerk in the Jersey City office, directing him, by order of General Spencer, to hand the bag of money over to Detective Boylon, from Inspector Byrnes' office. The clerk handed the dispatch to Superintendent Hill, who sent word back that he thought the money would be more secure in the safe, and that he intended to call on the Jersey City police for protection. An answer was returned directing him to say nothing to the Jersey City police.

This was the first thing that aroused Mr. Hill's suspicions, and he telegraphed that he would assume the responsibility of keeping the money in the safe and would deliver it to no one but Mr. Spencer himself. This determination on the part of Mr. Hill baffled the plans of the conspirators, and after telegraphing to Mr. Hill to wait a minute, the man who has been identified as Sipple left the bell-house.

Sipple was subsequently arrested and admitted to bail as above stated.

Another, and more successful, bold scheme was played on the telegraph recently. On the last day of October, Mr. W. F. Loux, employed by Nace & Moyer, dealers in druggists' sundries, at 520 Arch street, Philadelphia, started on a trip to Cincinnati. He was to stop in Pittsburgh the next day, and when the firm in Philadelphia received a telegram from that city signed by him, and dated at the hotel where he usually stopped, they were not surprised. The contents of the message, however, were rather startling. It said: "Please telegraph me money at once. Have been

robbed. Will explain particulars by letter." Messrs. Nace & Moyer were not long in wiring their salesman fifty dollars, and the next day they received another telegram, signed "W. F. L.," to this effect: "Order received. Will write this evening." In vain did they look for the letter of explanation. Several communications were received, but none of them mentioned the robbery. They were all of a business character, and included a number of orders. The firm thinking that probably the matter was a rather tender subject with their young man, refrained from referring to it; but the salesman's sister hearing of it wrote to her brother making inquiries, and received a letter stating that she was the first to make known the fact to him. He was very much surprised to hear of the robbery, and was still more astonished to know that \$50 had been telegraphed to him and that he had never received it. The whole affair was evidently the work of some clever swindler. No clue has been obtained as to who the person is, and there is very little chance of his detection. The firm's experience, however, may serve as a warning to other business men.

### Electricity as a Motive Power.

A correspondent of the London *Times*, writing of the Electric Exhibition at Paris, under date of Sept. 14, says:

"During the last few days a number of new machines have been in action to show the different applications of electricity as a motive power. This is a special branch of the subject, which will attract a large number of visitors. Most of the machines of this class are in the northwest corner of the building. Here the plowing machine of M. Menier is exhibited by M. Félix, and, although it does not actually plow the ground, it is interesting to see the way in which the electro-motor drags the plow with three shares across the space devoted to it, while a workman sits in it and guides its direction. Then there is a circular saw driven by electricity. The diameter of the saw is three feet, and the planks upon which it works are five inches thick. M. Piat exhibits in the same part of the building a stone cutter and an electrical hammer, which does all the work usually assigned to a steam hammer. Close to these machines is another for pumping water, driven by a Gramme motor; the large volume of water which is thrown out conveys to the eye some idea of the great force which can be transmitted by electricity, although in reality this machine does not require nearly so much force as many other motors in the exhibition. In the same corner we find a number of machines for sewing and for driving band saws, and so forth, all driven by the convenient little motor of M. Deprez."

### TELEPHONE DEPARTMENT.

"Telelogue" is gravely proposed as the name for a message by telephone.

Germany has been quick to appreciate and employ the advantage of the telephone. In Berlin alone, on October 1, 533 houses were served with telephonic communications, and the total length of wires was 750 miles.

Mr. Brough, Director of Telegraphs in India, considers that the strongest currents required to work a telephone would not exceed one-millionth of the unit of current employed to work telegraph instruments.

In India, the Oriental Telephone Company has arranged terms with the government for the introduction of telephone exchanges into the three Presidencies, and now only awaits the issue of licenses, which are nearly ready.

The experiments of Professor Pierce, of Boston; Brough, of India, and Warren de la Rue, of England, show that electrical pulsations equivalent in force to one cell of Daniells' battery, charging 6,200,000 miles of telegraphic line, produced sounds in a telephone.

Prof. P. G. Tait calculates the pulsations produced by sounds when employed to change the resistance of a telegraph circuit will produce a corresponding sound in a telephone, provided the change in resistance amounts to one-thousand millionth of the whole circuit.

Now that Russia has put galvanic batteries,

induction coils and insulated wires into the list of suspicious articles of import, it is not surprising to learn that the St. Petersburg police are tapping the telephones throughout the city, so as to be able to hear what the people say about the Czar.

Among the exhibits at the Paris Electrical Exhibition is a machine for hatching chickens by electricity. It has heretofore been observed that machine-hatched chickens suffer from lonesomeness, and do not eat so well as those who hear a mother's constant voice; and so some ingenious electrician has constructed a telephone which will convey to his henless chicks, scattered in different cages about a meadow, the clucking of a central hen.

An interesting telephone experiment may be made by introducing into the circuit one or more persons holding each other by the hands. Conversation can be carried on distinctly through six or more human bodies in this manner. The same principle works admirably on the switch-board, for testing or telling parties connected to "go ahead," by placing the thumb and finger as a connector from either switch to your telephone connection. In other words, using your fingers as a "plug" or "cord." Try it.

M. Alexandre Dumas has discovered that the telephone can be made rather too useful as the conveyance of a practical joke. The other evening at a well-known Paris restaurant, a merry friend asked to be put in communication with M. Dumas, and a few minutes later a squeaky voice replied from the Avenue de Villiers "M. Dumas has gone to bed. Anything important?" "Most important," was the response. M. Dumas was soon at his post with his ear to the telephone, and received the query. "How do you like tripe à la mode de Caen?" It is much to be doubted whether Dumas had any high opinion of the advantages of scientific progress just then.

Referring to our recent article on Telephone Transmitter Batteries, a Baltimore correspondent calls attention to the "Kreis Patent Carbon non-Corrovable Connection Battery." In this battery, he says, the carbons are fastened to a non-conducting incorrodable interposing plate, around which passes a platinum strip, which forms the connector; both plate and strip perforate the glass cover, and are securely fastened thereto, while the platinum strip is carried to and beneath a brass binding post, to which the conducting wire is attached. The negative pole is similarly connected. He adds that the battery is noted for its economy, cleanliness, longevity, and particularly its non-corrodable connections and special adaptability to telephonic purposes, which have secured for it the commendation of many gentlemen prominent in the profession.

A dispatch from Quincy, Mass., on the 3d inst., says: "About 75 citizens assembled in the Lyceum room this evening to consider the advisability of building a telephone line to this town to connect with the Boston system. Hon. Charles Marsh was chosen chairman and W. W. Adams secretary. Supt. Lytle, of the Telephone Dispatch Company of Boston, was present by invitation, and answered the many questions propounded by the gentlemen present. He stated that, for a guarantee of \$400, a line would be built and a public office established in some convenient and central locality. He expressed his opinion that from such a beginning a general telephone exchange system would be quickly developed. A committee was appointed to secure subscriptions to the amount required, it being understood that subscribers are to be entitled to take out the amount of their several subscriptions in using the line at the rate of 20 cents for each Boston connection.

A new patented solution called the Serson battery fluid is now being placed on the market to compete with sal ammoniac, generally used for all open circuit batteries. The new liquid is owned and controlled by the Worcester Individual Call and Signal Company, who claim that it will retain its full strength without attention for from 12 to 18 months, and that it is 50 per cent. stronger than either the Law, Prism or Leclanche batteries, and can be used in any of the above cells. Several of the leading telephone manufactories and exchanges of this city have been furnished with the solution for test purposes, and the action of the new fluid on old, condemned, porous cells is quite astonishing. The Serson battery fluid has the indorsement of



the best known electricians of Boston for superiority as to strength, durability and cheapness. There are at present three agents in this city, namely, Mr. Wheeler, of Worcester, Mass., who is to represent the company South; Mr. Mark Lewis, of Boston, who starts for the West, and Mr. O. J. Neff, of Boston, who will look after the interests of the company in the East and in Canada.

Mr. J. M. Crowley, Superintendent of the Southern Bell Telephone Co., Augusta, Ga., and formerly manager of the W. U. Tel. office in that city, has recently patented a new system of duplicate telephone wires, improved by the addition of a simple contrivance, which promises to supplant the magneto system now used. By the improved plan, the wires are made practically duplex, so that subscribers can talk on the same circuit, if necessary, without the aid of the central office operator, and two or more signal stations may be operated on the same circuit. By simply tapping a small key at any station, subscribers may secure immediate communication with any desired spot, and by the duplexing of the wires their number is very largely reduced, and an objectionable feature very appreciably remedied. Further than this, the new system abolishes the old magneto crank and other awkward and delaying appliances and greatly simplifies the machinery of communication, while rendering it also possible to reduce the expense of operating the apparatus. The improved system was tried recently at stations in Augusta, Ga., and in Richmond, Va., and it was found that subscribers were able to signal and talk with each other without difficulty over the same circuit, thus apparently demonstrating the entire practicability of the improvement.

M. de Arsouval, in a paper read before the Academie des Sciences in April, 1878, describes the exquisite sensitiveness of the telephone. Heretofore the most delicate instrument for detecting and measuring electrical currents was the galvanometer; but a physiological effect was possible by the use of a frog's leg, which would show more slight effects than that of the most delicately adjusted galvanometers with 30,000 turns of wire. In the experiments by M. de Arsouval a frog was prepared after the manner of Galvani's experiment, and an induction apparatus connected to the sciatic nerve, which became agitated by the rapidly succeeding pulsations caused to flow along the nerve. He withdrew the induction coil from the primary until the nerve ceased to respond on account of the feeble character of the electric pulsations, but a telephone which was in circuit with the nerve continued to vibrate. In the stillness of night the vibrations could be distinctly heard in the telephone when the induction coil was at a distance fifteen times greater than the minimum at which the excitement of the nerve took place. As the law of inverse squares applied to induction and distance it is evident that the sensitiveness of the telephone is two hundred times greater than that of the frog-leg galvanoscope, which in turn is by far more sensitive than the most perfect galvanometer. M. Demorest, in order to estimate the force of induced currents, which act to produce sound in a telephone, employed a battery current which would deflect a sensitive galvanometer less than two degrees.

## DASHES HERE AND THERE.

A not upright and plumb young man;  
A not very cheap young man;  
A soapy and lathery,  
Slippery, blathery,  
Two-fifty dollars young man.

If you want to become a telegraph operator, send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.—*Adv.*

In reply to a correspondent we would say that the telephone does not seem to interfere much with telegraph business. The latter is growing so rapidly that any possible effect the introduction of the telephone might have upon it is not perceptible.

Charles Brush is said to have invented a new style of storing electricity. He uses metal plates that can store large quantities of the fluid and retain it a long time. With this invention people can make their own electric lights and run street cars and machinery,

"Here I've been calling you for the past forty minutes, and if you don't answer more promptly there will be trouble." "Please call again," she naively replied, "I am always glad to see you." And he couldn't say her nay. Thus a gentle answer turneth away wrath.

Last year the German wire mills supplied England with 30,000 tons of wire and Russia with 40,000 tons. France received from Germany from 12,000 to 15,000 tons of steel wire for sofa springs, and America not less than 30,000 tons from the same source.

The Telegraphic "Artist" still flourishes, as witness the following cablegram to the Associated Press, dated London, Nov. 11: The six passengers who embarked at Gibraltar on the steamer Calliope, which was afterward wrecked on the Spanish coast, were Armenians, not Americans.

An Illinois Central correspondent at Waterloo, Iowa, complains that some of the operators on his line delay business by "fighting circuit." A "23" message asking for a doctor had recently to wait fifteen minutes on this account. There are several other circuits where a change in this respect would be beneficial.

QUICK AND VALUABLE. — The Manager of the Western Union Telegraph at Morrisonville, Ill., writes that "after using Farnham's Armaline two days he was greatly benefited." Send for circular to Brown, Pettibone & Kelly, Stationers, 194 and 196 Dearborn street, Chicago, Ill.—*Adv.*

A well-known telegrapher writes under date of Nov. 2 as follows: "Supt. —, in a note just received, says he is 'delighted' with your Nov. 1 issue. I have been to a good many places this week, and nearly everywhere I see THE OPERATOR, or hear it spoken well of. At Washington, Baltimore, points in Western Maryland, West Virginia and here, it's all the same."

One hundred and fifty men are engaged in digging a trench for the new American Atlantic cable from the beach to the cable house at Canso, a distance of seven miles, two miles of which is solid ledge. The trench is three feet deep and is to contain four cables, and considering the blasting required is a most difficult undertaking. It is expected that the work will be completed by December.

Mr. Hosmer, of the Canada Mutual Telegraph Company, says that the first line of that company that will be worked will connect Montreal with New York. He is very sanguine as to the financial success of the scheme, and says that he is daily in receipt of letters from all parts of Canada urging them to build lines in all directions, coupled with offers of subsidies. Mr. Hosmer adds that \$100,000 will be spent this fall in erecting lines.

The *Electrician* says: On the occasion of the recent visit of Mr. Gladstone to Leeds the resources of the Leeds telegraph department were heavily taxed. On the first day 447,274 words were transmitted, and on the second day 207,279, or a total of 654,553 words. These were all sent from one office. To meet the extra work fifteen extra Wheatstone automatic instruments were brought into use. The weather was very unfavorable, being rainy, so that the telegraph staff of Leeds may be congratulated on the result of their work.

A cable dispatch dated London, Nov. 2, says: "The cable steamer Faraday is now at Gravesend. The officials of the American Telegraph and Cable Company say she will sail again during next week. She will endeavor to repair the first cable, and then proceed to Nova Scotia to commence laying the shore end and intermediate section of the second cable. The interruption in the first cable is, roughly speaking, over 1,000 miles from the British shore, and its cause is not known. About 1,700 miles of the second cable have been laid."

A later dispatch from London says that the Faraday passed the Isle of Wight Nov 14, going westward.

Austin McLane, of New Haven, while working on the top of a high telegraph pole in Meriden, Conn., on the 5th inst., was suddenly taken with a fit, and reaching out helplessly in the air fell over backward. His fellow workmen on the ground cried out in horror, expecting to see him impaled on a sharp picket fence directly under him, but as he fell across the lowest cross-arm of the pole his leg caught between an insulator pin

and the pole, just above the ankle, and held him firmly. He was suspended there over five minutes, hanging head down, before two men could climb the pole and lower him by a rope to the ground.

In order to get telegraph news that can be read, it will be necessary for publishers to give something toward paying the salary of operators who understand their business. The dispatches are received in such a manner as to make them almost worthless. We have concluded to say to the poor Western Union Telegraph Company that we will pay an extra five dollars a week in order to get decent dispatches. By so doing we hope that besides getting a report that we can read, we will get it in decent time. It takes from two to three hours now to get a dispatch from St. Louis.—*Topeka (Kan.) Commonwealth.*

At Manchester, England, last autumn, a class was formed in electricity and magnetism, in connection with the Science and Art Department, consisting chiefly of employes at the central office, York street. The *Guardian*, of that city, says that while the telegraph clerks of the country are seeking higher remuneration for their services, it is satisfactory to note that, in this district, the clerks, female as well as male, are exerting themselves to acquire a competent knowledge of the scientific theories relating to their occupation, and so, to this extent, deserving a higher place.

In connection with our publication at this time of Wordsworth's poems, it will not be amiss to repeat a story about Dr. Bradley, who has just been made Dean of Westminster. The story runs thus: Many years ago, while staying in Westmoreland with the Arnolds, it fell to his lot on a certain day when a picnic was to be held to remain at home and mind the house. When the party returned he was asked if all had gone well, and replied that it was a very fortunate thing some one remained behind, for a tramp had tried his best to get in through the drawing-room window, and would have done so had he not been prevented. It turned out that the "tramp" was the poet Wordsworth.

A dispatch from Ottawa says that the American, Canadian, European and Asiatic Cable Company, which was chartered during the last session of Parliament, has completed its organization. It is said that the company will lay their cables next year, and during the present winter will make arrangements for the construction of land lines from Halifax to Victoria, B. C. The scheme is to lay two cables between England and some point in Nova Scotia, connecting with land lines across the Continent to Victoria (using the Canadian Pacific Railroad lines from Lake Superior westward) and to lay a cable from Victoria via the Aleutian Islands to China, Japan and India.

The Island of Penang lies off the west coast of Malacca, from which it is separated by the straits of that name. A merchant of Penang recently found it necessary to send a message to Singapore just when the cable which crosses the straits had been broken by a storm. The message was, however, bound to go. So it was sent westward instead of eastward, from Penang to Madras, Bombay, Aden, Alexandria, Malta, Marseilles, Paris, Calais, Fano, Riga, Vladivostok, Hong Kong and Saigon, and so having made the circuit of Southern Asia, Europe, Northern Asia and China, came to Singapore. It was delivered, read, and an answer sent back by the same roundabout route reached the sender in Penang in thirty-six hours, the message costing him eleven shillings a word. A message sent by way of Europe from New York to South America would cost nearly as many dollars a word.

Speaking of the "aggrieved telegraphists," the *Electrician*, of London, says: During the present week several of the larger telegraph establishments, including that of the London Central Office, have received their promotions under the revised scheme. As was to be expected, the apportioning of good things has not given entire satisfaction in every case; but, on the whole, there is reason to believe that the prevailing discontent has now been appeased. The promotions date back from April, and overtime performed since the 1st of June is to be paid for under the new system. The senior officers have not been overlooked, but compared with the rewards given to their importunate subordinates, the im-



improvements in the higher grades are insignificant. This is said to be notably the case in respect to the female officers.

A patent has recently been taken out for a means of steering a ship by electricity. The apparatus is the invention of Mr. W. F. King, an Edinburgh electrician, and was recently tried on board a steamer sailing between Glasgow and London. Its object is to dispense with a helmsman, and make the compass itself steer the ship. For this purpose the compass card is fitted with an index which is set to the true course, and one degree on either side of the true course two metal contact pins are adjusted; each pin is connected to a single Daniell cell, and when the ship deviates as much as a degree from her course to one side or the other the index comes into contact with one or other metal pin. The result is that a positive or negative current flows and actuates a hydraulic apparatus which works the helm.

A dispatch from Omaha, Neb., says that J. Hinckley, station agent of the Union Pacific Railroad, at Franklin, Utah, on the Utah and Northern branch of the road, has been murdered in cold blood. Two masked men, presumed to be strangers, entered the depot, and pointing revolvers at Hinckley's head ordered him to throw up his hands. Before Hinckley could make a move a revolver was discharged, and the shot passed through his neck, killing him almost instantly. The murderers, whose object is supposed to have been robbery of the station, turned and ran, from which it is concluded that the discharge of the revolver was unintentional. General Superintendent Clark, of the Union Pacific Railway, has been authorized to offer \$1,000 reward for the arrest and conviction of the murderers.

The practice of the Jersey City boys of climbing telegraph poles by means of an ingenious contrivance made of a piece of wire has become so common that the police have been instructed to put a stop to it. Who invented the idea of using a piece of wire as a means of ascending a telegraph pole nobody seems to know, but it is claimed that the inventor was a Jersey City boy. A piece of wire about four feet long is made into a running loop around the pole, leaving about a foot and a half of each end of the wire hanging down. These ends are fastened about the right foot of the boy. When the foot is raised in going up the pole, the wire is carried upward. A slight pressure with the foot on the wire draws it tight about the pole so that it cannot slip down. After the boy has gone up as high as he dares, he grasps the pole in his arms, lifts his foot, thus loosening the wire, and slides easily to the ground.

On May 31 a sealed packet was deposited in the care of the Secretary of the Academy of Sciences, Paris, by M. Mercadier, who said it contained a description of an application of radiophony to telegraphy. The inclosed paper was read on Oct. 3. The following is the abstract: "A continuous current traverses a series of radiophonic selenium receivers at station A, then the line, then another series at station B. Before each receiver a wheel with a circle of holes rotates regularly, and the passage of the light rays is blocked at will with a Morse key, giving interruptions of the musical notes in the telephones corresponding to the Morse signals. The wheels are arranged to give different notes, and each listener with a telephone concentrates his attention on a particular note. It is said that this system of Mercadier's is capable of being applied to lines of great length."

The Boston Herald, of October 30, says: The branch office of the Western Union Telegraph Company, which has held forth at the Old State House for upward of a quarter of a century, has finally been forced to yield its time-honored quarters. All the paraphernalia of the office was moved across to 31 State street last evening, a locality which has been famous as a telegraph office for over 30 years. The operating room of the newly consolidated offices will occupy most of the second floor, and on the ground floor there will be an ample receiving counter. Direct wires, quadruplex and duplex, will be worked from this point to New York, and all the principal cities and towns in New England will also be in direct communication. James Roche, Jr., has been appointed manager of the office, and John McGrath, formerly

cashier in the Old State House office, will occupy the same position in the new quarters.

Some interesting details of the telegraph in Japan have just been made public here. In that country the telegraph system was begun in 1871, and in 1872 the 900 miles of the principal trunk line were opened. At the end of 1879 there were 3,929 miles of poles and 9,345 of wires. The total number of dispatches sent in 1879 was 1,272,756, of which above 96 per cent. were in Japanese; the international messages were 22,695. The telegrams in the vernacular average one to every thirty inhabitants, on the basis of the latest census figures of population, 35,750,000. The receipts for 1879 were \$541,615; the total expenditures, new construction excepted, were \$508,370, and there was a resulting balance of profit for the first time, the tariff for native messages having originally been put too low. The Japanese language having no regular alphabet, a combination of Morse characters was devised, 47 characters in all, and this "native alphabet" has worked fairly for nine years. The average charge for 20 characters of it, for about 60 miles, is, approximately, 3 sen, or less than 2 cents.

An agreement left with Register Docharty for record shows that the Western Union Telegraph Company has secured a ninety-nine years' lease of the lines of the Northwestern Telegraph Co. of Wisconsin, operated in the States and Territories and the Dominion of Canada. The instrument is dated May 7, 1881, and provides that the Western Union Company shall, in addition to paying 7 per cent. interest on first mortgage bonds, aggregating \$1,180,000, pay a rental of \$100,000 for the first year, and a pro rata yearly increase in the rent until it shall reach \$150,000 by the year ending July, 1896, and thereafter pay the last mentioned sum annually until the expiration of the 99 years; also all taxes and interest upon the capital stock of the Northwestern Company, which is fixed at \$2,500,000, divided into fifty dollar shares. The interest to be paid on the stock is to be 4 per cent. the first year,  $4\frac{1}{4}$  for the second, and be increased at the rate of one-eighth of 1 per cent. each succeeding year until it reaches 6 per cent. in 1896, and to continue at that rate during the remainder of the term of the contract. The Northwestern Company agrees to maintain its organization, and the Western Union grants a further allowance of \$2,500 per annum for 14 years for that purpose.

## NEW YORK CITY ITEMS.

### Echoes From 195.

It is said that Mr. W. J. Dealy is to be the new manager at 195.

Mr. Weller denies that he has engaged Jack Stephenson as chief operator for the Mutual Union at Jersey City.

Miss Dailey, city line chief, is making many friends by the kind and thoughtful attention she shows the gentlemen who work in her department.

Mr. Tom Eagan, "one of the boys from home," has been summering at Nahant. He returns to the office greatly improved in appearance.

Mr. Martin Durivan breaks the hearts of all the fair damsels in the office. Martin parts his hair in the middle and cultivates aristocratic airs.

The aspect of things at 195 is becoming quite merry hued, especially among those who have had their salaries increased.

Mr. F. W. Jones, who recently returned from a trip through the South, has been confined to his room ever since by a severe illness. We are glad to say, however, that he is now recovering.

The distinguished scientist and electrician, Col. Weller, still continues to rotate, the observed of all observers. The philosophic gentleman has lately favored the denizens of Rutherford Park with a lecture on æsthetical culture.

Mr. Voyer and Mr. Barratt are warm admirers of the new tenor, Provost. Mr. Voyer recently sang "Di quella Pira," from "Il Trovatore," and fairly carried West Hoboken by storm with his high chest "C."

Among the operators who have left to cast their fortunes with the Mutual Union are Al. Wright, Fred. Wilcox, and Messrs. Flood, Cherrie, Holbrook and Flint. Quite a number propose leaving on the 1st.

Mr. W. L. Ives has been presented with an Encyclopedia of Poetry. The fly leaf bears the inscription: "Presented to Mr. W. L. Ives by his friends on wire 51 East, as a slight token of their regard and appreciation of his uniform and courteous treatment during their brief but pleasant official connection."

Mr. Thomas J. Landy, who has been 20 years or more in the service, has received his official appointment as Assistant Chief Operator of the Southern Division. The marked improvement in the handling of Southern way business of late stamps him as a man of executive ability and sound judgment.

Mr. A. S. Brown has resigned his position as District Superintendent of the W. U., and has received the appointment of General Superintendent of the Mutual Union Eastern Division. The intelligence of Mr. Brown's advancement was received with marked expressions of approval in the Western Union operating room.

Speaking of the medal awarded at Paris to Mr. George Cumming, of 195, the Cincinnati Gazette says: Mr. Cumming is a telegrapher of experience, and his invention is intended to obviate many of the disadvantages of the ordinary keys. His key is not merely a mechanical invention, but is a solution of an electrical problem which will hereafter be known as the "Cumming theory."

### Other City Items.

Mr. Sheldon, formerly train dispatcher at Sea Beach Palace, Coney Island, is assisting Mr. A. S. Downer in opening city offices for the Mutual Union Company.

In reply to a correspondent we would say that the company which bought the territory of the Metropolitan T. & T. Co. outside of New York is known as the Metropolitan District T. & T. Co. The officers are: President, W. H. Wolverton; Secretary, H. G. Pearson; Treasurer, A. S. Dodd; Auditor, W. O. Whitcomb; General Manager, George L. Phillips; General Agent L. I. Division, L. B. Harris; Board of Managers, Messrs. Wolverton, Theo. N. Vail, Jno. Harrison, Phillips, Pearson and Dodd.

In the Continental office, 30 Broad street, recently, a sharp snap was heard, followed instantly by a quivering mass of blue flame playing around the switch-board, which, by the way, is about the size of a sheet of note paper. For a moment consternation reigned among the operators. The cause was probably contact of one of the wires with the wires of the Brush electric light. There are some, though, who assert that the bolt came by supernatural means, and was hurled at the wretch who transformed "Milwaukee" into "70 Waukeee."

On Thursday, the 3d inst. the men employed by the Met. T. & T. Co., who work under the direction of Supervisor Vermilyea, waited upon that gentleman at his residence in Oxford street, Brooklyn, for the purpose of presenting him with a gold watch and chain. Foreman T. Green, who acted as spokesman, in making the presentation, said that it was but a small token of their respect for Mr. Vermilyea, and of their high appreciation of his worth as an officer of the company by whom they were employed.

The next meeting of the New York Electrical Society will be held at No. 64 Madison avenue, on Wednesday evening, Nov. 16, 1881, at 8 P. M. Mr. Charles S. H. Small will read a paper on the Novelties of the Paris Electrical Congress. By reason of the great difficulty of securing a suitable meeting room, the night of meeting has been temporarily changed from Thursday to Wednesday. Those members in arrears, especially those whose addresses are unknown to the secretary, are requested to forward him their dues or state whether they desire to continue their membership.

J. W. MORELAND, Secretary,  
195 Broadway, New York.

The Fire Commissioners apprehend danger from the electric light wires which are stretching over so much of the city. On Monday the woodwork over the entrance of the Germania Theatre was fired by contact with the naked wire, permitted by a break in the insulator. Lead over the wood was melted by the electric current. The lights whose wire did this damage belong to the theatre, and are not connected with the public lighting of the street. On Tuesday last an imperfectly insulated electric wire lighting pri-



vate premises came in contact with a fire telegraph wire in William street, and the current rushed into the signal box near Chambers street and quite demolished it. If the insulation is thus imperfect while new, constant repetition of such accidents when it becomes old and worn out is, the fire officials say, to be feared. The electric wires, however, chiefly trouble the department when they have to be cut away from the tops of houses to permit the firemen to work at fires. They have to be cut with an instrument having a wooden handle. If the handle is wet it becomes a conductor, and the fireman holding it stands in danger of receiving a fatal shock. That no fatal accident of the sort has happened as yet is due to the great care which is exercised by the firemen, and which, sooner or later, in an exciting emergency will not be exercised.

## PERSONAL.

Mr. H. J. Hendricks is manager of the W. U. Telegraph Office and Telephone Exchange at Albion N. Y.

Mr. W. Price, of Petittcodiac, N. B., and Mr. C. Byrne, of Fredericton, N. B., are working in the cable office, North Sydney.

Mr. C. W. Ward, of Marshalltown, Ia., has accepted a position with the Mutual Union in Chicago, on construction work.

Mr. F. M. Kiger, formerly of Red Bud, Ill., has been appointed agent for the Cairo & St. Louis Railroad at Murphysboro, Ill.

Mr. L. C. Stebbins, late train dispatcher for the Illinois Midland Railroad at Charleston, Ill., fills the position of agent at Red Bud.

Mr. Herbert Brickett, W. U. delivery clerk, Portland, Me., was married Oct. 25 to Miss Annie Castell, of that city.

Mr. J. A. MacCrellish recently collected at the Western Union office, Trenton, N. J., \$103 for the relief of the Michigan sufferers.

Charles H. Billings, of the Cincinnati W. U. office, has "resigned," owing to his furnishing copies of dispatches to others than those to whom they were addressed.

D. H. Ogden, Superintendent of the Hawkeye Telephone Co., Cedar Rapids, Iowa, was in New York last week and gave THE OPERATOR office a call.

John M. Hogan, a messenger in the San Jose (Cal.) A. D. T. office, was accidentally shot and killed, Oct. 26, by a fellow-messenger named Stephen Espinosa.

Mr. E. L. Taylor, formerly night operator at dispatcher's and train master's office, N. C. R. R., Sunbury, Pa., has accepted a day position with the C., St. P., M. & O. Ry. at Windom, Minn.

Mr. Raymond, of Atchison, Kan., has resigned to accept a position with the W. U., at his home in New London, Conn.; Mr. Sholes, of the same office is taking night report at Kansas City. Miss Mollie Taggart is a recent addition to the Atchison office.

J. G. von Chauvin, who was managing director of the Direct Cable Co. previous to its capture by the cable wreckers, and for some time representative in America of the French Cable Co., is now representative in England of the American Telegraph and Cable Co., at 211 and 214 Gresham House, Old Broad street, London.

A Cheyenne, Wyoming, correspondent says that \$62.50 a month is the lowest salaries the U. P. R. R. have paid night operators. This has recently been increased to \$65. Day men receive from \$65 all the way to \$90, \$75 being the average. The lowest paid dispatchers is \$120 a month.

A handsome gold watch, chain and locket, valued at \$300, were presented by Mayor Mackintosh, Nov. 3, to Mr. Warren Y. Soper, on behalf of the citizens of Ottawa, Ont., as a token of respect and esteem on his retirement from the management of the Dominion Telegraph office in that city. Mr. Soper is now superintendent of the Canada Mutual Telegraph Company.

The Providence Journal of Oct. 29, says: "Mr. A. L. Suesman, who has been identified with the Western Union Telegraph Company in this city for the last seventeen years, has been appointed manager of the American Rapid Tele-

graph Company's office in the Merchants' Bank Building, and will enter upon the duties of his new position at once. Mr. Suesman is an accomplished electrician and an affable gentleman, and will make friends wherever he may be."

BURLINGTON, Vt.—Our branch office has been closed, the operator, Miss Zealand, going home to Canada. Our day man, Mr. C. W. Learned, has left for parts unknown. Mr. George Cheny takes his place. Our night man, Mr. Stewart, goes away this month to Canada, his home, to spend a short vacation. He is not expected back again. Mr. James McDermott, of Saratoga, takes his place. The Mutual Union is pushing things this way. They expected to open next month; they have a large gang of men at work.

The following changes have recently taken place at St. Louis: Mr. James A. Murray has been appointed manager of the "gold and stock" department, vice Dougherty, resigned. Mr. Geo. McGann, formerly assistant chief operator A. U., and since the consolidation holding a similar position with the W. U., has resigned to accept a more lucrative position with the M. U. as chief operator. His successor is Mr. E. L. Parmelee, formerly all-night chief, and Mr. Jas. H. Gallagher has been promoted to the all-night chiefship, vice Parmelee.

Among the subscriptions to THE OPERATOR received last week was that of Mr. V. V. Bullock, father of ex-Gov. Bullock, of Georgia. Mr. Bullock is probably the oldest telegrapher on any newspaper subscription list. He opened the first office in Albion, N. Y., in 1850, for the House Company, and it was there that ex-Governor Bullock was initiated into the mysteries of the business, in which he still finds time to take as lively an interest as does his father. The old gentleman is now seventy-five years of age. His hair is as white as snow, but his step is as buoyant as a young man of twenty. His mind, too, is as clear as a bell, and his memory wonderful. He relates the stirring events of the olden time, the hard-fought contests of the opposition, as though they occurred but yesterday.

WASHINGTON, D. C.—Mr. E. L. Bugbee, formerly manager of the American Union, and Baltimore & Ohio Telegraph Companies here, has resigned that position to accept one of responsibility in the Western Union office. He bears with him the best wishes of a host of friends for the success he is sure to attain in his new position. Mr. G. H. Taggard, late Washington manager of the A. & P., succeeds Mr. Bugbee temporarily. It is understood that the main office and also the branch offices are to be continued as B. & O. offices. The Mutual Union Co. are fitting up a main office opposite the Western Union Co., cor. Fifteenth and F streets, and will also open branch offices. Mr. J. J. Grant, of Cincinnati, has been appointed Mutual Union manager.

ROME, Ga.—J. E. Rolston, of the S., R. & D. here, has accepted a position with the W. U. in Chattanooga. D. C. Sims, of the same road, has gone to Mobile. Charles Woodruff, formerly counter clerk in this office, has been appointed operator at Gadsden, Ala. S. B. Watson, of Talladega, succeeds him. The Misses Noble and Carnochan still work the city wire, with a new addition, Miss Florence Young. V. G. Shearer, of Talladega, has accepted a position at Meridian, Miss., with the W. U. T. J. Flemming, of Rome, is his successor. The Telephone Exchange, which has been so long looked for, has at last put in an appearance. Nearly all the merchants here are subscribers, and the future of the telephone seems promising. The central station will be in the office of the W. U., managed by Mr. W. H. Adkins.

Speaking of the electric light men at Paris, the London Truth of October 20 says: There was no humility in the mien of the American inventors present. They were free and independent citizens of the United States. Hiram Maxim, who comes from the pinewood State of Maine, has a head expressive of originality of mind and of audacity of carrying out ideas. He has a shock head of iron-gray hair. Jablochkoff is a Pole, and all and young. His strength seems to have all gone into hair and beard. Siemens is a patient savant, but not an humble one. Unobservant would be the person who could fail to perceive in him a millionaire, although he is not puffed up by his prosperity. Swan is the North of

England man, doggedly persevering, independent, seeing his way clearly and without conceit.

The London staff of the American Cable and Telegraph Company is composed of Messrs. H. E. Robson, Manager; Mr. J. Ball, from the French Co., New York; Messrs. Bacon, McLachlan, Garbutt and Hitch, from the French Co., London; J. W. Wilson, French, Brest; Messrs. Williams and Butt, Anglo, London; Messrs. Parsons, Bowes and Smith, Direct, London, and Mr. W. F. Ward, formerly of the first French cable company, latterly of the Brazilian and Submarine. The Penzance staff is composed of Mr. G. R. Mockridge, from the Direct Co., Boston, Mass., Manager; Messrs. Taylor, Wood, Brock, Chambers, Giles and O'Donoghue, Direct, Ballinskelligs; Messrs. Motton and Marshall, French, London; Mr. Potts, Anglo, London; Messrs. Loughran and Loam, who have recently returned from the East, and Mr. T. T. Eckert, Jr., from New York.

GALVESTON, Texas.—DEAR SIR: The increase in salaries expected for several weeks past has not as yet put in an appearance, although it was faithfully promised to take effect from Oct. 1. Our day force consists of Mr. Skinner as Chief; Messrs. Church and Kinsey manipulate the New Orleans duplex; Whittaker, West Texas; Taylor, North Texas; McLean, Houston; Smith, St. Louis; Otto, Shreveport wire; Mr. Fox at the Cotton Exchange. Night force consists of Mr. Maer, as chief, Moore, press man; Larcombe, North Texas; Dougherty, West Texas; Holmes, Houston; Gardner, New Orleans. The day force is working extra to fill in the night force. The Santa Fe Company also does a good business here: Mr. Newton, as Chief Train Dispatcher; Messrs. Clark, Campbell and Russell as Assistant Dispatchers, Mr. Graham in charge of the commercial department, the latter two being old W. U. men. At a call meeting of the Brotherhood of Telegraphers held here Nov. 6, sixteen members were enrolled. As soon as our charter can be received and a permanent organization made, we will have at least twenty-five members.

## LONE STAR.

Arizona newspapers speak in high terms of praise of the intrepid action of Robert C. Lord, a corporal in the signal service corps, who, in the midst of the Apache outbreak, went out to repair the telegraph line between Fort Grant and Camp Thomas after it had been cut by the Indians. It seems that, a few weeks ago, about 10 A. M., the line went down between Fort Grant and Camp Thomas, and Corporal Lord ordered his repairmen, A. F. Liedercranz and J. F. Vandell, both soldiers, to proceed to repair; the commanding officer furnished an escort of two men and the party of four left about noon. Vandell was something of an operator, and took the field instrument with him, Lord heard from him by wire about 2 P. M., and the trouble being farther on, they reported that they would communicate again in half an hour. This was the last heard of them, and, as near as can be ascertained they were killed about a mile from the place they telegraphed from. About 6 P. M. news arrived by courier that the troops were fighting the Indians 12 miles distant, and that the repair party were all killed. After the troops came in, Corporal Lord insisted on going out to repair the line, as it was much needed, and, recognizing that one man was as safe as a few (all that could have gone with him) he insisted on going alone. They, however, forced one man on him, whom he seems rather to have looked upon as an incumbrance. He got away at daylight, rapidly moved over the country and repaired six breaks. The Indians, however, cut the wire again behind him. Corporal Lord reached Cedar Springs stage station, a distance of 22 miles, at 1 P. M. The next morning he returned, found where they had cut it again, and repaired it, establishing the communication, and got back to camp safely. This is what may be termed telegraphing under difficulties, and reflects great credit upon the profession, as well as upon Corporal Lord.

## DIED.

LIVERMORE.—Nov. 7, at Portland, Me., Mrs. Hattie Ellis, wife of Charles D. Livermore, manager W. U. Tel. Co., aged 33 years.



# A \$ 40.00 TWENTY-SIX SHOT SPORTING RIFLE FOR ONLY \$15.00

WEIGHT 8½ lbs.



Price \$15.00

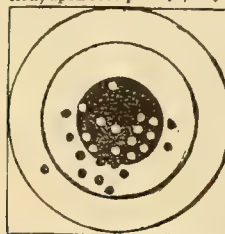
POLISHED & ENGRAVED STOCK.

NO. 1.  
SHOOTS ACCURATELY UP TO  
1200 YARDS.

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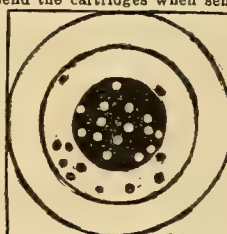
## THE EVANS TWENTY-SIX SHOT MAGAZINE SPORTING RIFLE. SHOOTS 26 SHOTS IN 60 SECONDS WITHOUT REMOVING FROM THE SHOULDER.

No hammer in the way. Throwing down the guard ejects the shell, loads and cocks. Having sold through our advertisement of a month ago over 2000 Rifles, we now offer the balance of 1500 for \$15 each. **THIS IS POSITIVELY YOUR LAST CHANCE** to get one of these magnificent Rifles. **THE EVANS** is without exception the most accurate, longest ranged, easiest loaded, quickest fired, best constructed and most perfect repeating Rifle in the world. It is 44 Calibre, centre fire, POLISHED AND ENGRAVED BLACK WALNUT STOCK and sighted with graduated sights up to 1200 yards, at which distance it is more accurate than any Rifle in the world. The magazine contains 26 shots, and is located in the stock as shown in cut No. 2. The working parts are all steel of the finest quality, case hardened and blued, and for \$2.00 extra or \$17.00 we will send one our full nickel (silver-plated) Rifles, which is without doubt the most elegant in the world. The barrel, and every part except the wood work, being nickel silver plate, looks like silver and can never rust in any climate. Owing to the failure of the **EVANS RIFLE CO.**, who spent over \$200,000 in perfecting this Rifle, we were enabled to purchase their whole stock of over \$50,000 worth of perfect Rifles at one-third the actual cost of manufacture. The price of these Rifles has always been \$40 each, and when this lot is sold they cannot be purchased again at any price. **Order now**, you cannot make a mistake, as you can readily sell it for \$30 to \$40. **TAKE NOTICE**, upon receipt of \$15 we will send one **Evans Twenty-six Shot Sporting Rifle** as above described, carefully boxed, and when full amount of cash comes with the order we will send a box of reloadable metallic cartridges (Evans cartridges can be reloaded many times). Or sent C.O.D., privilege of examination, upon receipt of \$3, or your Express Agent's guarantee that it will be returned to us free of express charges in case you do not take it, but we do not send the cartridges when sent C.O.D., as this is extra inducement to those who send cash with order.



Send Money by P. O. Order or Registered Letter at our risk. Price of Reloading Tools for reloading shells \$4.00, former price \$6.00. **EVANS Cartridges** can be reloaded many times. **Every Rifle guaranteed perfect or money refunded.** **UNSOLICITED TESTIMONIALS!** "The Evans has been my constant companion for two years. I have shot 60 Buffaloes at one run.—Kit Karson, Jr." "I have used the Evans in competition with the Sharp, Winchester, and Ballard, it beats them all."—J. Frank Locke, Huronville, Minn. "It shoots like a house a fire! I can clean out a whole band of Indians alone with it. I shall recommend them wherever I go."—Texas Jack. "It is the Strongest Shooting Gun I ever put to my shoulder, and as for accuracy it can't be beat. I know it to be the best Rifle in the market."—J. A. Boyd, of Yates' Sharp Shooters.

When ordering mention that you want the polished and engraved stock. **TAKE NOTICE.** These targets were made with the Evans shooting off-hand at 200 yards at Creedmoor, Sept. 17th. The whole 26 shots being fired inside of one minute, and without removing the Rifle from the shoulder. Of course much finer shooting could be done by taking time. As to our responsibility we refer to any Mercantile Agency, Express Co. or reputable business house in this city. **CUT THIS ADVERTISEMENT OUT, IT WILL NOT APPEAR AGAIN.** Address **E. G. RIDEOUT & CO.,** 10 Barclay Street, New York.



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We will send to the same or separate addresses any two of the books marked at \$1.00 for \$1.75, and **THE OPERATOR** for fifteen months in connection with any one dollar book for \$2.00.

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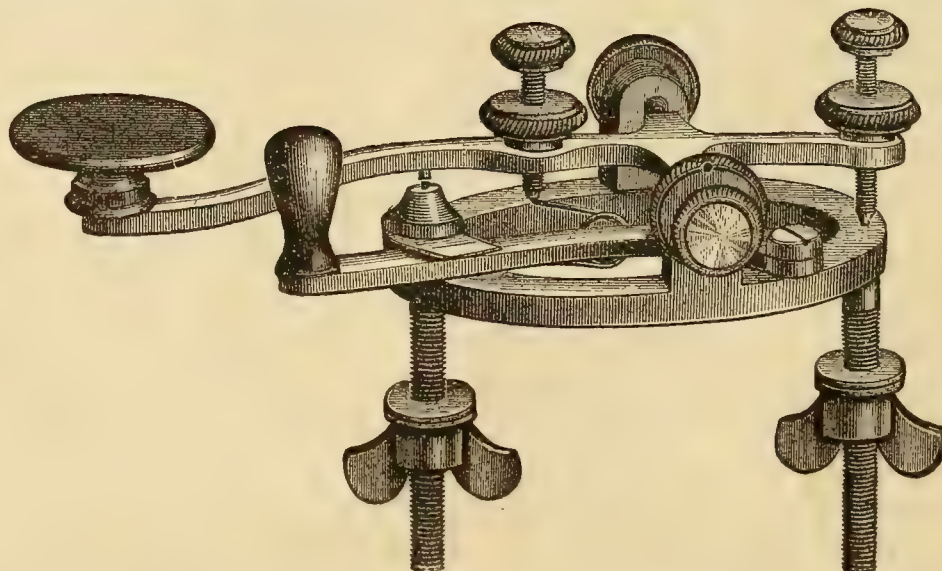
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J. H. BUNNELL & CO.,

112

LIBERTY STREET,

New York.



BEST IN THE  
WORLD.

PATENTED Feb. 15  
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We have much pleasure in being first to make and bring to the notice of Telegraphers and Managers of Telegraphs this new and important improvement in keys.

We offer it as being *more durable* and in every respect *better* than any other for rapid and perfect sending for the following reasons:

The lever is *only one-half the weight* of the ordinary brass lever, as generally made.

The entire Lever and Trunnions together being made of *but one piece* of fine wrought steel, the common defect of loose trunnions is avoided, the strength of a heavy brass lever is obtained with much less weight of metal, and, by the perfect bearing which the solid trunnion gives, together with the use of *hardened platina points*, *sticking is absolutely prevented*.

The size and proportions are such as to make it the most perfect operating key possible to obtain, either for the hand of the skilled and rapid expert, or the beginner.

PRICE, \$3.00. FINELY FINISHED, AND LEVER NICKEL-PLATED.

LIBERAL DISCOUNT ON ORDERS FOR COMPANY SUPPLY.

Steel Lever Key sent by mail post paid, to any part of U. S. or Canada on receipt of the above price, by registered letter or money order.



# THE LAW BATTERY.

THE GREATEST  
TELEPHONE BATTERY.



## PATENT APPLIED FOR.

As a Telephone Battery, the "LAW" unquestionably excels all others, for the following reasons, viz. :

- 1st. The cost of renewing is about ten cents per year, as against more than one dollar per year for others.
- 2d. The cells are all exactly alike.
- 3d. They continue exactly alike.
- 4th. They never get out of order.
- 5th. The first cost is less than any other.
- 6th. The connections NEVER corrode.
- 7th. Every part of the battery is exposed to view, and if a fault exists it is instantly seen.
- 8th. The water cannot evaporate.
- 9th. The sal ammoniac cannot escape.
- 10th. The parts are not liable to break.

With the introduction of the "LAW," the objection to the use of a battery in connection with the telephone sinks into insignificance, for the care is nothing, of injury or interruption to the service there is none, and the cost of maintenance is less than one cent per month.

The battery is not an experiment; but an established fact.

It has been in use by the Law Telegraph Company for two years.

The materials used in its construction are the very best. No acids. No odors. Great recuperative power. Nothing to renew except the zinc and sal ammoniac—no porous cup, plaque or prism. Fits the standard size battery-box.

The Bell Telephone Co. of Missouri writes: "We have been testing the 'Law Battery' for several months in our telephone circuits, in competition with the various styles of Leclanché and Callaud batteries. For transmitter work the 'Law' excels all others in uniformity of action. As a result of the test referred to, we have concluded to adopt the 'Law.' We have upward of 250 cells now in use."

DIRECTIONS FOR USE.—Put in one-half pound of sal ammoniac and fill with water to the shoulder.

PRICE, \$1.25 PER CELL.

Manufactured and for sale by the

**LAW TELEGRAPH COMPANY,**

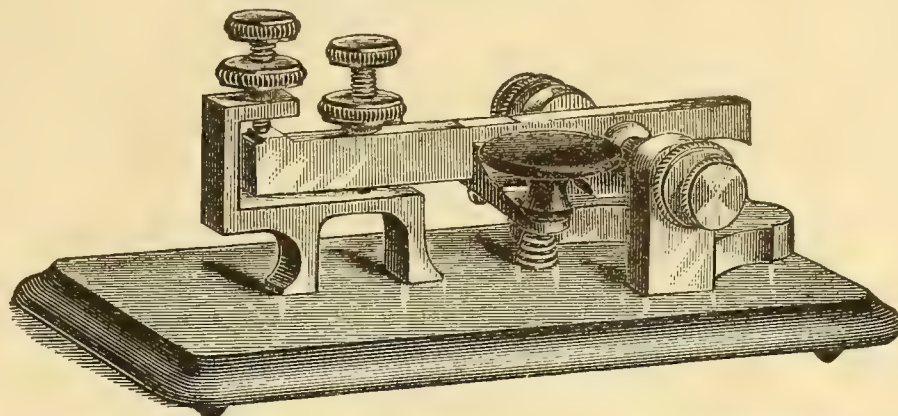
140 FULTON STREET, NEW YORK.

WILLIAM A. CHILDS, Manager,

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PATENT APPLIED FOR.



## COMBINED KEY AND SOUNDER. NO BATTERY REQUIRED.

Works perfectly as a KEY, with sound equal to best SOUNDER.

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Price, with Telegraph Instruction Pamphlet, packet of Morse Alphabet Cards, etc., \$1.50. Sent anywhere in the United States by mail, prepaid, on receipt of price in stamps, money order, or registered letter.

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Telegraph and Telephone Supplies.

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**A \$6.00 REVOLVER FREE TO YOU.**

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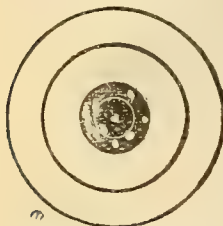
WEIGHT 7½ OUNCES  
THIS CUT IS 2-3 SIZE.

**THE BLUE JACKET**

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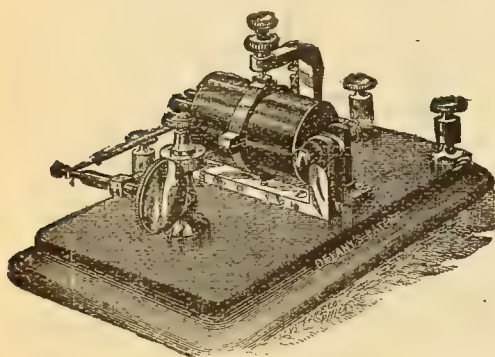
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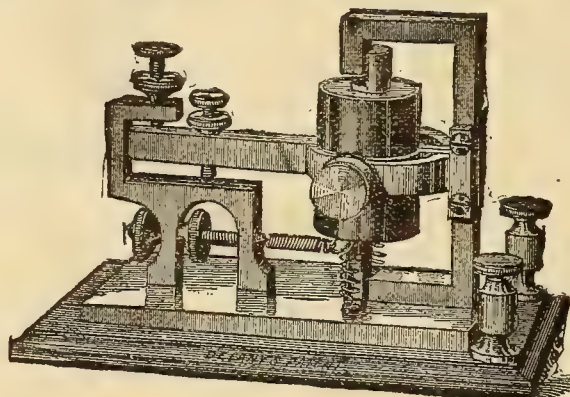


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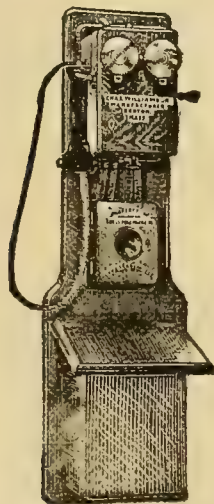
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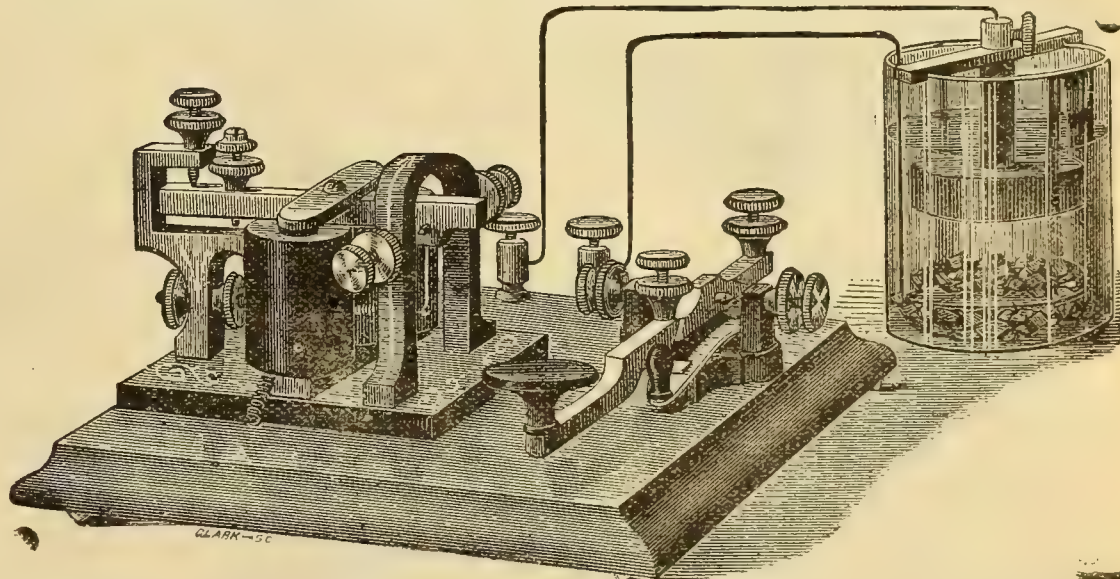
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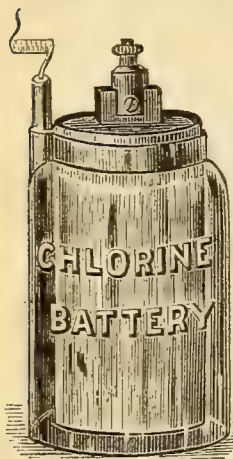
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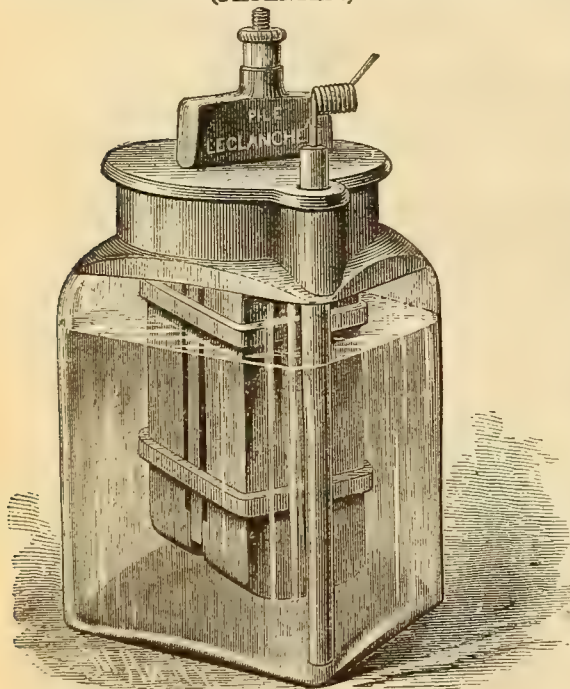
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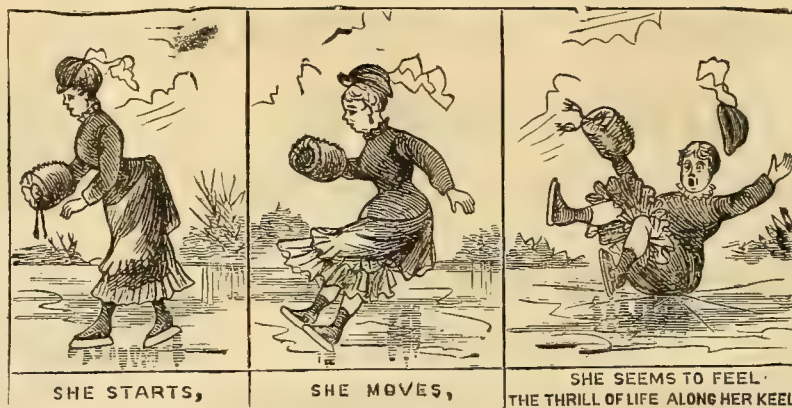
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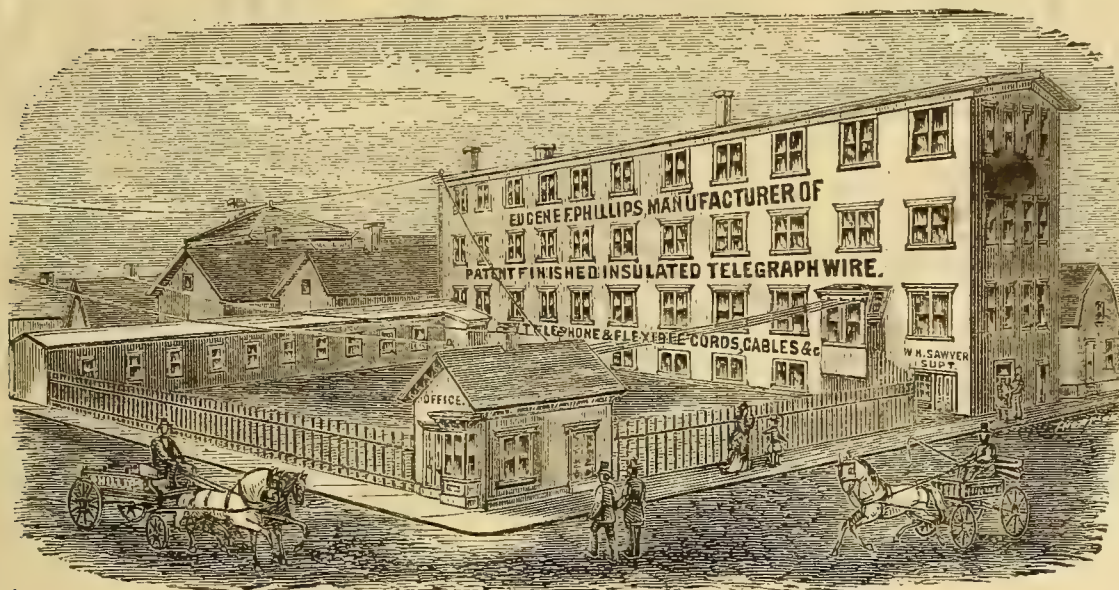
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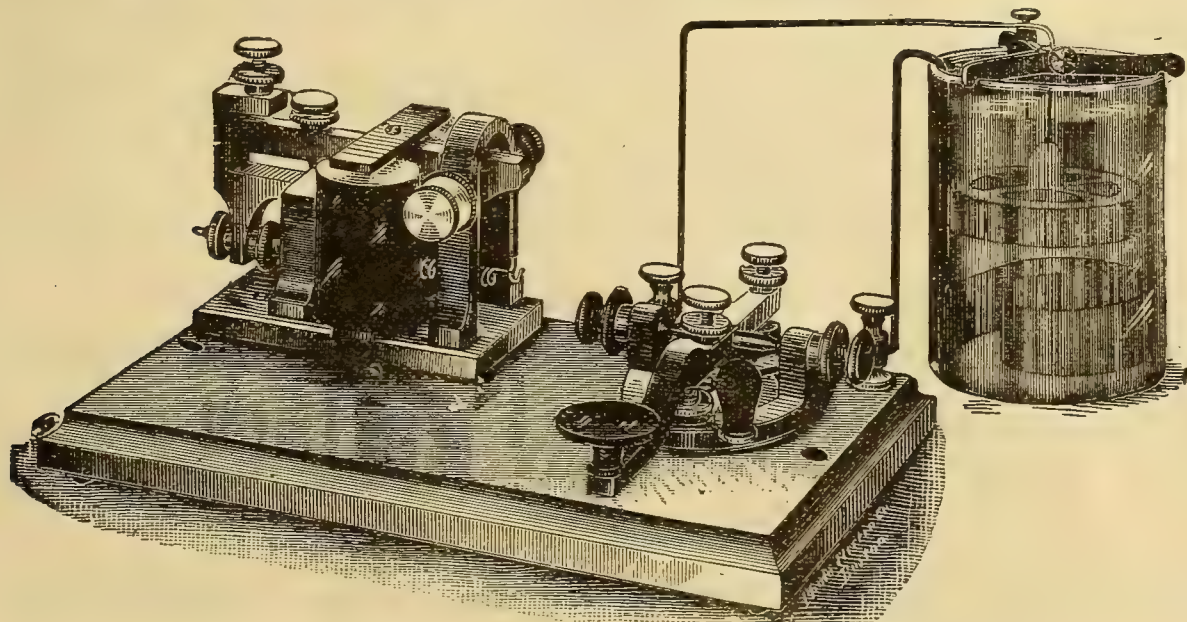
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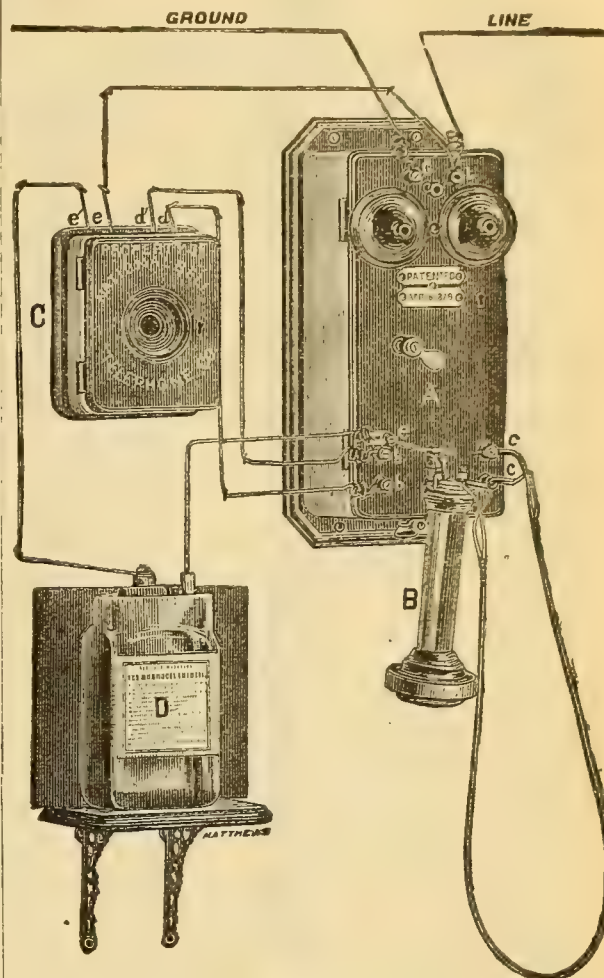
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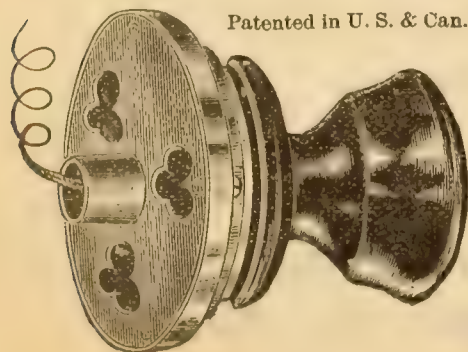
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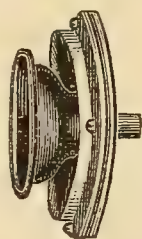
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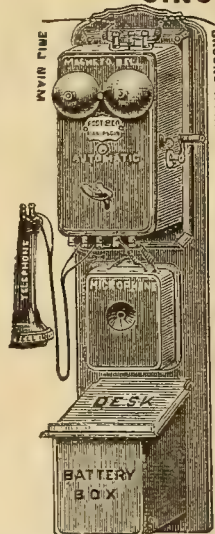
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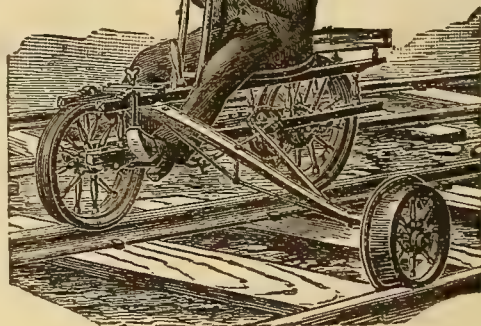
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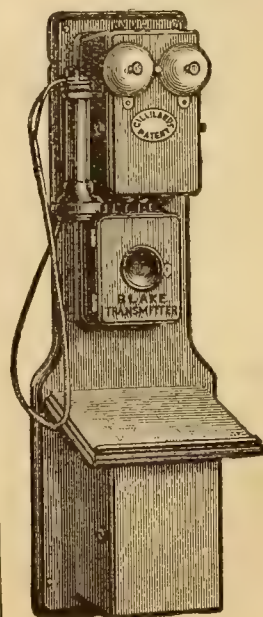
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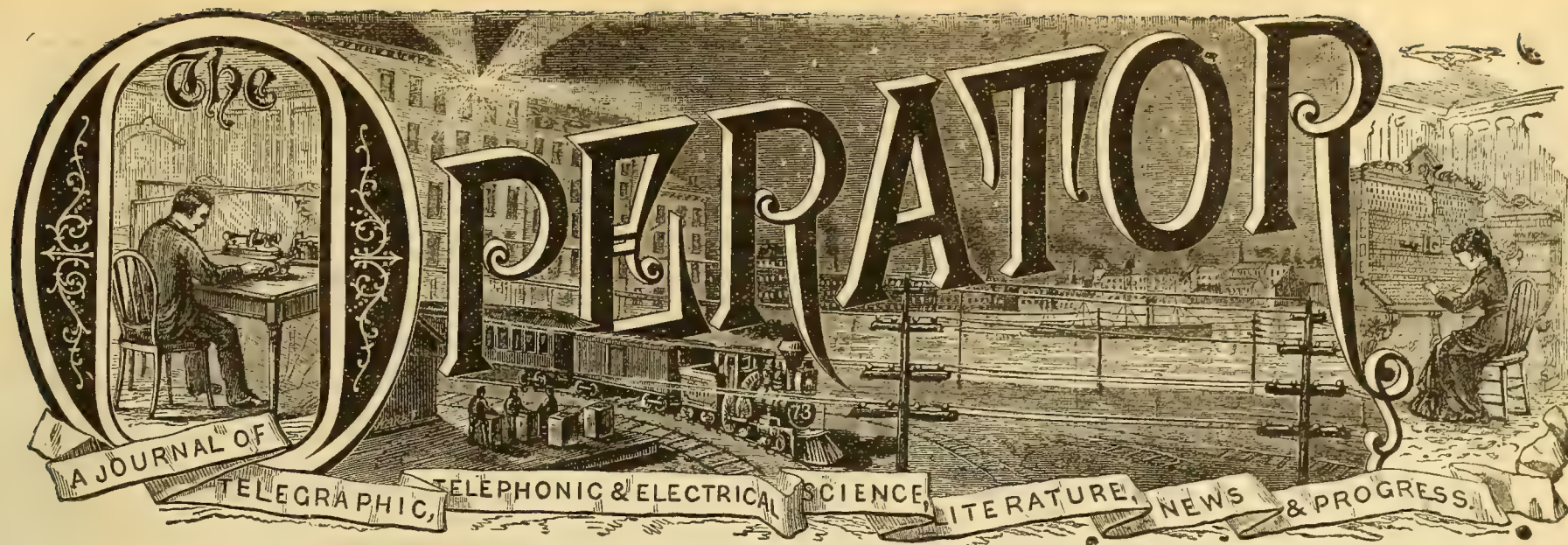
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VOL. XII.—No. 23.

NEW YORK, DECEMBER 1, 1881.

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### A PROTEST.

The following "Printer's Protest," from the Albany Argus, will touch also a sympathetic chord in telegraphic circles :

Oh, why don't people form their a's,  
And finish off their b's?  
Why do they make such crooked c's  
And such confounded d's?

Why do they form such shocking e's  
And f's with ague-fits?  
Their g's and h's are too much  
For any printer's wits.

What a human eye is without sight  
Is an i without a dot;  
J's are such curious crooked things  
We recognize taem not.

K ought to stand for kussedness,  
But comes in we'l for kick;  
L's and m's are mischievous,  
While n's just raise Oia Nick.

O's are rarely closed at all,  
And p's are suaggy things;  
Q's might as well be spider legs  
And r's mosquito wings!

Some people make a passing s,  
Who never cross a t,  
Others use the self-same strokes  
To form a u or v.

W's get strangely mixed,  
X's seem on a spree,  
Y is a skeleton on wires—  
Zounds, how we swear at Z!

& yet, just think, what typos get  
From drivers of the quill—  
They call us such a careless set  
And scribble on at will!

Well, they will scribble, and we must swear,  
And vainly try to please,  
Till they go back to school and learn  
To make their a, b, c's!

Thomas Alva Edison.

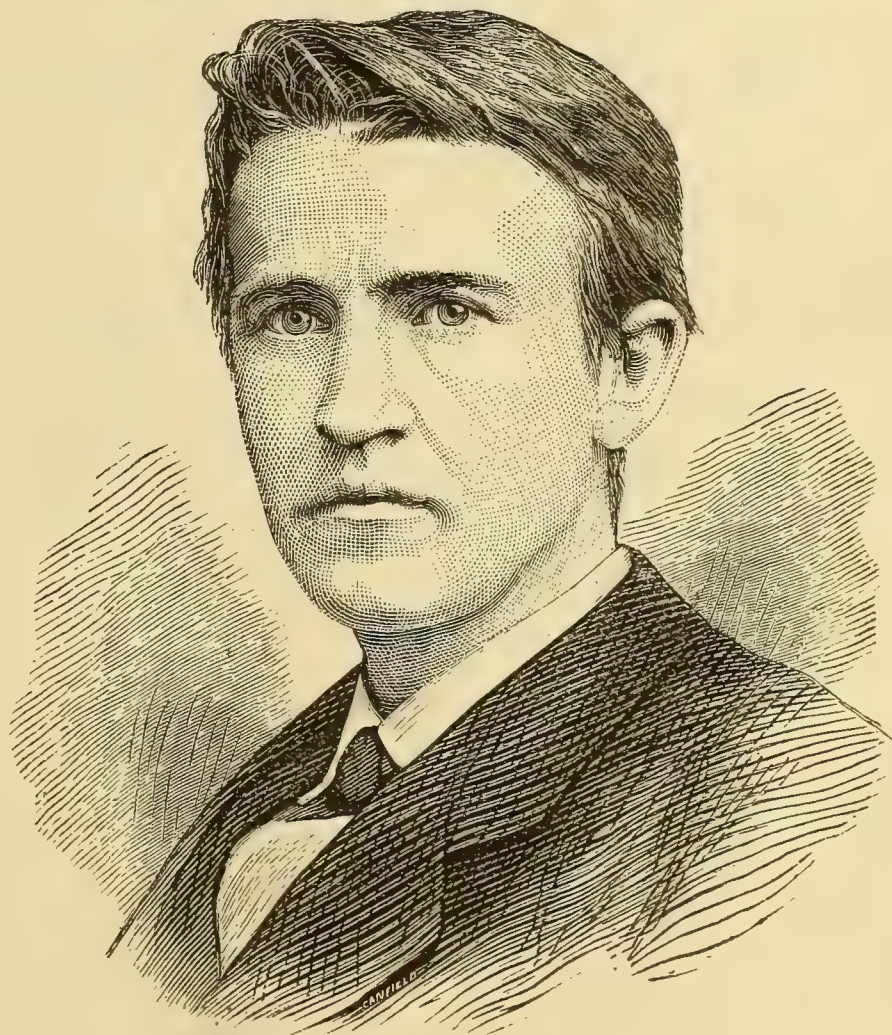
The *Telegraphic Journal*, of London, in an extra number published by it on Nov. 5, gives a partial and carefully-written biographical sketch of Mr. Thomas A. Edison. We all know what has been said of Mr. Edison on this side of the Atlantic, so that it is interesting now to learn how the great inventor is regarded by European electricians and scientists. THE OPERATOR published a biography of Mr. Edison about three years ago, but a study of the lives of such men is always profitable reading. The *Journal* says:

America has long been renowned as the land of mechanical invention; but she has conspicuously distinguished herself during the last few years. This has been largely due to the genius of Mr. Edison, who, by his many remarkable inventions, which it is needless to enumerate, has

drawn upon himself and his native country the attention of both the learned and unlearned in the whole world. Mr. Edison is the chief figure amid a perfect host of inventors, great and small, who swarm in the United States; and being also a

spring of enthusiasm which are ever ready to welcome anything in the shape of a prodigy.

Thomas Alva Edison was born at the village of Milan, in Erie County, Ohio, on Feb. 11, 1847, and is therefore nearly 35 years of age. His



Thomas A Edison

self-made man, he has been almost worshipped by his countrymen. There was something almost magical in these inventions, which appealed powerfully to the imagination; and when it was known that their author was a self-taught telegraph operator, who looked a mere boy, it is no wonder that Edison was lionized as he has been. Such a character, like Balzac in fiction or Mme. Bernhardt in art, breaks the commonplace monotony of existence, and lets loose those hidden

father was of Dutch descent, and had been in turns a tailor, a nurseryman, and a dealer in land and lumber. His mother, though born in Massachusetts, was of Scotch parentage and a woman of good education, she having formerly been a school teacher in Canada. Indeed, she may be regarded as the sole teacher of her boy, for the two months' regular schooling he received is of no account. Like many other famous men, therefore, Edison was much indebted to his mother.



Like many other famous men, too, Edison, as a boy, was fond of amusing himself alone. He was a great reader, and did not complain about the nature of a book, so long as it was a book of some kind. It is related that he once set himself to read through an entire subscription library, beginning at the bottom shelf, and that he had penetrated several shelves before his project was given up. At ten, we find him reading books of chemistry, and when he began the world as a train-boy on the Grand Trunk Railway of Canada and Central Michigan, he littered the empty baggage car, which served him as a store for his fruit and newspapers, with old retorts and bottles of chemicals which he had picked up at odd times for a few pence.

With the Yankee instinct for "getting on" abnormally developed, he purchased a second-hand printing press, together with a quantity of type, and started a newspaper of his own, entitled *The Grand Trunk Herald*. Of this literary venture he was proprietor, editor, staff, publisher, printer and devil in his own person; and it obtained the flattering celebrity of being noticed in the *London Times* as the only paper printed and circulated in a railway train.

During this time he was investigating everything mechanical which came under his notice. He pored over the working of the telegraph, he studied the locomotive, and once ran the train between two stations himself. He also continued his reading, and "Newton's Principia," side by side with "Ure's Dictionary of the Sciences," and "Burton's Anatomy of Melancholy," could have been seen on the newsboy's shelf. He also took to chemical experiments in an evil day for the pursuance of his new business, for one day he accidentally set fire to the baggage-car, and the irate conductor put a summary end to his literary career and his scientific researches, by ejecting him and all his traps, chemicals, fruit and printing press included, out of the car.

From his first acquaintance with it, the telegraph has exercised a strong attraction over him; and it was a turning-point in his life when, after he had gallantly rescued a child of the Port Clements station-master from being run over on the line, the grateful father undertook to teach Edison how to telegraph.

Edison was meanwhile turning his versatile talents to account as a shoemaker, a trade which he had picked up in some unaccountable way; but the work was distasteful, and he took a situation at Port Huron, Mich., as a telegraphist.

From this time, for several years, he led the life of a traveling operator, now engaged in Canada, now in Indianapolis, now in Cincinnati or Louisville, now in Memphis and Boston. Many amusing stories are told of his ready ingenuity and gawky appearance during this period. His mind was now fairly directed toward invention, and he acquired the habit of experimenting and thinking at night, after the duties of the day were over. At Memphis, in 1864, we are told that he devoted himself to the problem of duplex telegraphy, and after having his studies and ideas frequently ridiculed and discountenanced by his ignorant fellow operators and chiefs, he found his way to Boston in 1868, where he met with more encouragement and better success. "In spite of his peculiar fashions of passing his time," says a writer in *Scribner*, "he had become one of the most accomplished operators. He overcame obstacles put in his way on account of a somewhat uncouth appearance, and soon took an important position. He had up to this time dallied with a number of ideas he has since perfected, acquired a beautiful, small, rapid handwriting, as clear as print, and gratified considerably his desire of seeing the world. He had once been on the point of sailing for South America, from New Orleans, but had only been prevented by an accident. A new period commenced for him. Some small things of his succeeded—a dial instrument for private use, a chemical note-recorder, and others—and he began upon a vibratory principle of telegraphing. He commenced a great epoch in one's history—to believe in himself. Up to this time he had not done so. 'I did not think,' he says, 'that I was competent.' He was not successful, however, in an important trial of his duplex system, and was soon again adrift."

He went to New York in a disconsolate mood, and happening to be in the office of the Gold and Stock Company at a critical moment when their indicator was out of order, he repaired the instrument and secured an engagement with the com-

pany. He soon invented a printer of stock which was adopted by the company, and from that time his progress was assured. He was also taken up by the Western Union Telegraph Company, and retained by both companies at a handsome salary, to give them the first bid for his new inventions. He was now in a position to start a manufactory of his own at Newark, N. J., where he made all his gold and stock printers, and employed about 300 men; but the business left him too little leisure for invention, so he sold out and retired to Menlo Park, a new settlement of a few yellow-painted wooden houses on the Pennsylvania Railway in New Jersey, about twenty miles from New York. Here he built a large barn-like structure upon the top of a hillock, and fitted it out as a workshop and laboratory, the workshop being on the basement and the laboratory upstairs.

We need not dwell at length on his several inventions, for they have been so frequently cited and published of late that they are familiar to most electricians. Before the invention of the loud-speaking telephone and the phonograph had enormously extended his fame, Edison was becoming known in Europe as a rising young genius, sure to do wonders in his day, and his gold and stock printer, his electric pen, electromagnet and quadruplex system, had given him a solid reputation as an electrical inventor. Then came the invention of the carbon telephone, the phonograph and microtasmeter, which swelled his fame to world-wide bounds, and finally, as if to inflate it to bursting point, he telegraphed the enthusiastic but rash announcement across the Atlantic in October, 1878, that he had solved the problem of the divisibility of the electric light, and would soon be able to light up our homes by electricity, at a mere fraction of the cost of gas. A year or two has since passed by, and although the letter of announcement cannot yet be said to have been fulfilled, yet, by dint of ceaseless energy, Edison has gone far towards accomplishing what he anticipated. The exhibit at the Paris Electrical Exhibition shows that he has overcome some of the obstacles in his way, and that he has obtained a large measure of success. The invention of the phonograph is undoubtedly one of the most transcendent flashes of mechanical inspiration that ever entered into the mind of a man; and the loud-speaking telephone, with its carbon transmitter and prepared chalk receiver, is one of the greatest marvels ever constructed out of dead matter. On hearing it and examining it, we cannot but wonder at the daring hardihood and patience of invention which has made it what it is.

Edison has taken out in all about three hundred patents. He has been called "the young man who keeps the road to the Patent Office hot with his footsteps." His plan appears to be to patent all the ideas that occur to him, whether tried or untried, and to trust to future labors to select and combine those which prove themselves the fittest. The result is that the great bulk of his patents are valueless in point of practicability; but they serve to fence the ground in from other inventors.

From our illustration, it will be seen that Edison's appearance is youthful in the extreme. "When you go to his house," says a writer, "he may very possibly answer your inquiry for 'Mr. Edison' himself; or, if not, you will be shown into his laboratory, where you will find him among his assistants; and if you try to guess which is Mr. Edison, your best plan will be to select the least obtrusive person in the group. His figure is slight and young-looking, though the face, from its long habit of concentration, has an old look; he has a frank, cordial expression, and, like most men of great powers, can be almost a boy when his attention is turned away from his absorbing interests. But when he is not aroused he seems to retire within himself, as if his mind had traveled a long way off, and his attention comes back slowly. He has the peculiar pallor of a night-worker, and if you stay with him through the night, you will find him as bright at the end of the vigil as at the beginning." His power of work is something extraordinary, it being usual for him to work sixteen hours each day, and at a stretch; as, for example, when he invented the phonograph; he has eschewed sleep for days and nights on end. More than one assistant has already succumbed to the strain of trying to keep up with him.

Mr. Edison is married, and has three children—two boys and a girl—one of each sex being nicknamed respectively Dot and Dash. He is young, and as he comes of a long-lived stock, notwithstanding the severe strain to which he subjects his powers, we may reasonably expect that he will continue to bestow many useful inventions on his age. We can assure him, says the *Journal* in conclusion, that should he ever fulfil his intention of coming to England he will meet with a cordial reception from English electricians.

#### Review of the Past Two Weeks.

Since our last issue the Mutual Union Telegraph Company has fairly opened for business, and has received fully all the patronage it had expected. It commenced by charging the same rates as the Western Union charges. The lines are now open for business to Boston and other important points east; to Philadelphia, Baltimore and Washington south, and to Albany and intermediate points north, and it is expected will be open to Chicago, St. Paul, St. Louis and other western and intermediate cities during the present week. There are now seven branch offices in this city opened, as follows: No. 126 Front street, Nos. 148 and 2,281 Third avenue, No. 5 Union Square, No. 529 Broadway, No. 331 Greenwich street and No. 996 Sixth avenue. The main office of the company is in William street, just below Pine street. The tables there are arranged for 80 instruments. The office is being superbly fitted up. It is expected that the new company will have handsome quarters free of rent in the Post-office, this favor having been granted to the Western Union. It has also secured the right to run its wires over the East River bridge, paying annually a toll of \$30 a wire therefor, and thus obviating the continual annoyance from broken cables by ships dragging their anchors.

The Baltimore & Ohio Railroad Company, doing business as a telegraph company, has also obtained a footing in this city. At a joint meeting of representatives of this company with the representatives of the American Rapid Telegraph Company, Nov. 19, a contract was entered into by which the Baltimore & Ohio leases for business purposes, between Baltimore and New York, four wires of the telegraph company, and engages to have two wires ready within thirty-five days between these two points by way of York, Harrisburg, Allentown and Easton. In New York there will be ten offices provided, including one in the Stock Exchange. The American Rapid Telegraph Company already covers the New England States with its wires, and the result of the agreement of the 19th ult. will be an exchange of its business with that of the system of the Baltimore & Ohio Railroad, embracing 5,000 miles of wire and covering Washington, Wheeling, Cincinnati, Cleveland, Chicago and St. Louis. This telegraphic venture is a pet scheme of Mr. Garrett. The fact of the B. & O. leasing wires from the American Rapid would imply that its working arrangement with the Mutual Union has been abandoned, and that they are now working in rivalry.

The Mutual Union, however, will not miss the aid of the Baltimore & Ohio, since it will soon have a line of its own to the West. It is also reasonably certain that an extensive press bureau will develop in connection with this enterprising rival of the Western Union. Furthermore, in asking recently for space upon the floor of the Stock Exchange in this city, the Mutual Union applied for the sweeping privilege of doing "all kinds of telegraphic business," thus making itself a probable rival to the Gold and Stock Telegraph Company, which now holds a monopoly of the sending out of quotations. The Mutual Union claims to possess a "ticker" of original design, and which can be depended upon for as rapid and thorough work as that of the Gold and Stock Company.

The New York *Times*, in commenting upon the fact that the Western Union Company is to lose its monopoly of the telegraphic business in the New York Stock Exchange, says: Many complaints have been made of the service furnished by the Western Union and not infrequent-



ly of late intimations have been given that competing companies would soon be admitted to the floor of the Exchange. But these hints have made little impression upon either the Western Union or its patrons. Few have anticipated the change in affairs which *The Times* is authorized to announce, to the effect that leases are to be executed for space in the Exchange to no less than three other companies. The Continental Company, which for some time has been recognized as under the Western Union control and merely a tender to that company, is to be retired. The new competitors are the Baltimore & Ohio Railway line, the Mutual Union Telegraph Company, and the Bankers' and Merchants' Telegraph Company. Each of the three will be fully equipped for a rush of business. The Bankers' and Merchants' Company now owns 12 wires between this city and Philadelphia, and probably is better able than any other line to give prompt service to and from that city.

Strenuous opposition is still being made throughout the country to the erection of opposition poles. In Jersey City, on the 21st ult., Mr. Henry Platner and 24 men of the Mutual Union were arrested and fined \$10 each, with the alternative of ten days in the calaboose, for erecting poles in violation of a city ordinance. This opposition comes, it is said, from the Western Union. The prisoners' counsel created a lively scene during the hearing by declaring that the Board of Aldermen refused them permission to erect poles because they would not "buy" the Board. The latter body subsequently appointed a committee to look into the charges made by the lawyer of the Mutual Union Company.

At Bloomington, Ill., a party of pole-choppers found that their lawless doings could sometimes be brought up with a round turn. About forty poles belonging to the Mutual Union Company, across the Dawson tract in McLean County, were dug by Western Union employes, under the instructions of its Superintendent. Upon their return to Bloomington these men were all arrested, and application was made for a preliminary injunction restraining the Western Union from further interference with the wires of the Mutual Union. On the day set for the hearing of the criminal cases against the Western Union Superintendent and his employes, the attorney of the Western Union sued for peace, and begged of the attorneys of the Mutual Union to withdraw the criminal charges against their Superintendent and employes, they agreeing to make no opposition to the issuance of a permanent injunction against them, and further agreeing to pay all costs and expenses of all the cases, including the expenses of reconstructing that part of the line torn down. The Mutual Union acceded to the proposition, and so the matter was settled.

Cable work is progressing rapidly in South American waters. A cable despatch has been received announcing that over one thousand six hundred miles of submarine cable intended for the Central & South American Telegraph Company have been shipped on the steamers *International* and *Dacia*, which sailed from London respectively on the 10th and 15th ult. The remainder of the cable will be shipped in February next. It is expected that this country and Mexico will be in direct telegraphic communication with Peru and Brazil by June next.

Since Mr. Jay Gould obtained control of the Manhattan Elevated Railway all the ticket-sellers on that line who are telegraphers have had their pay increased from \$2 to \$2.25 per day. The outlay is recouped, however, by decreasing the pay of all ticket-sellers who are not telegraphers from \$2 to \$1.75 per day.

Some of the messenger boys in this city have indulged in a strike on grounds more poetical and emotional than wise and sound, and some of them were sent to jail. It appears the Mutual District boys at No. 48 New street, were very fond of their manager, Henry E. Wallace, and when they learned that an order had been made for his transfer to an up-town office their expressions of condemnation of the action were so decided that trouble was feared by the officers of the company. The transfer was insisted upon, however, and on the 22d ult., the boys, about seventy in number, struck. Detachments of messengers from other offices of the company were detailed to fill the strikers' places. These were interfered with by the strikers. Before the police made any arrests, one of the substituted messenger boys had one of his ears nearly bitten

off by a leader of the striking boys. The police arrested four boys, Thomas Gray, Henry Shiner, George Moran and Edward Hassart. They were taken to the Tombs Police Court and were charged with disorderly conduct. Justice Kilbreth sentenced three of them to ten days' imprisonment each and discharged the fourth.

In bright contrast to this episode was the banquet given, at Boston, on Thanksgiving Day, to the telegraph messengers by the merchants of that city. About seventy lads sat down to dinner, and as they progressed from turkey to oysters, and pudding, and fruit, and ice cream, it is not necessary to say that the fun became fast and furious, and that the Crawford House rang with uproarious applause when the "lay-out" was unanimously decided to be "immense." At the head of the table, bearing themselves with all the grave dignity of capitalists, were "the guests"—being five boys in the employ of the Mutual Union Telegraph Company, and five more from the District Telegraph Company. Treated with all the honors usually belonging to guests, these little fellows seemed proudly conscious and thoroughly appreciative of their position. Toward the close of the dinner, Mr. Thomas Martin, receiver at the State street office, spoke to the boys briefly, complimenting them upon their energy, honesty and faithfulness, as evinced during the year, and encouraging them to still further efforts. Mr. J. J. C. Wilson, also in the employ of the company, followed Mr. Martin, and earnestly urged his young hearers to strive, while doing their duty, to advance higher and higher day by day. They could not always be telegraph messengers, and should have thoughts for the future. If each lad did his best, and improved every opportunity for advancement, the future would be a bright and a proud one. The boys gave three rousing cheers for Messrs. Wilson, Martin and others of the clerks who had gathered to witness the dinner, and seemed to appreciate the advice offered them.

The boys of the American Rapid Telegraph Company were also at the Crawford House in the afternoon, and their dinner of turkey was as heartily enjoyed and attended by virtually the same incidents as at the Western Union boys' feast.

#### Practical Hints to Telephone Inspectors.

Nearly all telephone exchange companies have on their pay-rolls a class of employes who, by common consent, are denominated "inspectors," although inspection usually and rightly forms but an inconsiderable fraction of the duties devolving upon them. In exchanges located in the smaller cities and towns, where a perfectly organized corps of employes is necessarily, on the ground of economy, a practical impossibility, the duties usually falling to the lot of inspectors must, of course, be performed by the general utility man, who may combine the offices of lineman, batteryman, inspector and general constructor. He will, for the purposes of this article, come under the third head.

It must be remembered that the writer of this article, not being at present concerned in the active management of any telephone exchange, is compelled to confine himself to generalities, to indicate the methods which, subject to modification by individual conditions, would be employed by himself; and, therefore, to glean any profit from these pages, each reader must in practice make the requisite variations from the text to suit his own case, in so far as he agrees with the writer, and be prepared to pass without remark anything which he cannot agree with.

It is a very difficult thing to lay down a series of iron-bound rules for the use of inspectors in a business where so much depends upon the exercise of discretion, and yet it is, on the whole, better to provide a system of rules, as an inspector who is worth his salt will have sufficient

sense to break them if a really necessary case comes up.

The duties of an inspector should be to examine regularly and at stated intervals the apparatus—including bells, telephones and batteries—at each subscriber's station, as well as the leading-in wires; and also, as far as practicable, the line wires. He ought, moreover, to make himself perfectly acquainted with the direction in which the line wires run, such a knowledge assisting greatly in the localization of line troubles.

He should be able to perform necessary repairs, and, remembering that an ounce of prevention is worth a car load of cure, should be careful when inspecting any apparatus to leave everything pertaining thereto in an A 1 condition, so that there will be no likelihood of any trouble occurring there between visits.

An important part of his business is to discover promptly the cause of any trouble which may manifest itself, and, when he has discovered it, to know that it is the right cause. He should never touch, disarrange or readjust any instrument or portion of apparatus, until he is sure wherein the trouble lies. It is necessary also for him to know when to leave anything alone, and this is, in many cases, the most difficult thing for an inspector to learn.

To leave everything else immediately when any trouble is reported upon a circuit, and to locate and, if possible, remove the trouble before leaving it; to report faithfully the nature and cause of the trouble, and to suggest means to prevent its recurrence; and to become thoroughly acquainted and familiar with the central office, especially the switch-board and all appliances connected therewith—so that when an emergency arises, he shall be competent to assume intelligent control of the office, or in the event of any defect occurring there, he may be able at once to find the trouble and remove it—should be the aim of every inspector.

Many other duties will, of course, be laid upon the inspector from time to time; but the above will probably form his daily work.

In the accomplishment of his diurnal inspection, he will find it frequently necessary to make slight repairs at a subscriber's station. He may often have to change the instruments and to adopt temporary remedies for electrical defects. It is, therefore, advisable that he shall be supplied with convenient tools and instruments, whereby his work may be expedited and his time economized.

The following articles will all be found useful; many of them indispensable: First and foremost, the "pliers" (if only one tool is at hand, let it by all means be a pair of pliers with cutting edge); a small, well-tempered screwdriver, a pair of tweezers, an infinitesimal oil flask and a coil of magnet wire.

Without these tools the inspector should never take his walks abroad. It is always prudent to carry a Leclanché zinc or two; a couple of packages of sal-ammoniac; half a dozen or so of one-inch and inch and a quarter blue screws and a paper of double pointed tacks.

It is well that inspectors should know what they are expected to do, and that when they do know, they should be required to do it.

Those exchanges wherein all the employes are made to feel that they have an interest in the success of the system, and in which the employer takes an interest in the well-being of the employed, are invariably the most successful in operation. I know of several exchanges where, every week, the superintendent gathers together his office managers and inspectors, and each man details his week's experience and compares notes with every other one. If any employe has found cases which he has not clearly understood, or thoroughly mastered, he describes the case and it is discussed, much to the benefit of all concerned. The idea is an excellent one and should be universally carried out.

In my opinion, the following rules, or similar ones, should be laid down for the guidance of inspectors:

Each inspector to be promptly on hand at the regular time—whatever that time may be.

A complaint book or bulletin board to be kept on the office table, where it is accessible at all times; inspectors to be required to examine the book every morning before going out, to see if any complaint has been received over night.

Previous to starting on a regular inspection route, the inspector must ascertain from the



office manager if any circuits have been noticed out of order; should there be any, he must attend to the trouble the first thing.

Every inspector should be required to see all his subscribers' instruments at least once in two weeks, and upon every visit should ascertain from the subscriber what the condition of the service has been since the last visit. In case of any specific trouble being mentioned, in addition to testing for the same, it must be reported at the office, that the cause may be fully investigated. (It will be most generally found that complaints of a general character arise, as graphically stated by a Western exchange manager, from "pure cussedness" on the part of the subscriber. It will never do, however, to say this, or even to intimate as much).

Inspectors should be required to keep every part of the telephonic apparatus perfectly clean, and, to aid them to this laudable end, they should be furnished with a small soft-haired paint brush, with which to brush off accumulated dust.

They should be required to test thoroughly each instrument inspected, which may be done as follows: On entering the subscriber's office, the inspector should first brush away the dust from the instrument, and, with a cotton cloth carried for the purpose, otherwise brighten up and clean the apparatus. He should then try each screw-post, to see if they are perfectly tight. He ought also to carefully look over the ground wire and see that it is well fastened to the ground connection, whether it be gas or water pipe.

He should look in the battery box and try the battery connections; scrape off any accumulated salts that may have gathered round the jar, and see whether the zinc is intact and whether all the sal ammoniac is dissolved. Of course, any loose screws must be tightened. Any zinc worn nearly through should be taken out and replaced by a new one, and if the liquid has no sal ammoniac in it, about half of an ordinary package should be put in.

Having done all this, then and not until then should he call up the central office, and thus test the calling generator. If a prompt response be obtained, he will thus know that the calling apparatus is in good order. The time taken to get a response should be noted, and, if unreasonably long, reported and the cause ascertained.

He should then desire the central office to signal the subscriber's office, and thus test the alarm apparatus or bell.

The telephone and transmitter will, of course, have a practical test by the necessary conversation.

If all is well, he may then pass on to the next subscriber, giving, as he leaves the office, a look at the entering wires, both inside and out.

It is now evident that there is a positive advantage in giving the whole apparatus a rigid scrutiny, and in fixing any loose screw, defective battery or other apparent trouble before testing the operation of the instrument. Many troubles can thus be detected and removed which, were actual operation alone trusted to, would not always manifest themselves then, but would appear at some early period; and, even though they did affect the present operation, would necessitate more than one call to the central office, thus wasting the time of both inspector and operator.

In the event of finding some part of the apparatus out of order, he would, of course, not leave that place until the trouble should be removed, or, in any case, until the instrument should be put in temporary repair.

No inspector to be allowed to adjust or disarrange any part of the telephonic apparatus, except for the removal of a fault, and then only if he knows where the fault is and in what it consists.

If any inspector shall incidentally see the instruments of a subscriber which are under the care of any other inspector, and shall ascertain that they are in any way out of order, he should fix them to the best of his ability, and report the case and his action thereon, on his return to the office, to the proper inspector.

All inspectors know ought to the telephone wires, and if, while passing in the streets, he should see any that are out of order or in a dangerous condition, he is to report the matter to the proper department; or if he shall see any telephone wire lying broken, he is to make a

temporary splice with office wire between the two broken ends.

Should an inspector happen to be engaged outside upon any case that takes considerable time it will be his duty to report his whereabouts frequently to the central office, so that he may readily be found in case of trouble.

Regular inspection work must be dropped in order to respond to a complaint from a subscriber, and circuit troubles shall take precedence of all other complaints.

Other and probably better rules, and more of them, are doubtless in force in many exchanges, but the proper observance of the above will tend toward good work.

It is intended in a subsequent article to suggest the proper course to be followed in testing for troubles, and to give some practical and simple hints for ascertaining the cause of troubles and for locating and removing them.

### The Operator's Victim.

An individual with a decidedly country look about him, and a liberal quantity of hay-seed strewn through his locks, entered the Western Union Telegraph office at Puree, one cold afternoon last November. The office was occupied by the gentlemanly operator, Henry Smart, and four or five genteel young loafers, at whom Henry slyly winked, as much as to say, "Here's some fun, boys."

The new comer shuffled up to the counter in a somewhat careful manner, as if not quite certain how to proceed. After nodding at Henry in a friendly way, he asked, cautiously, "How much does it cost to send a dispatch?"

"Four dollars," responded Henry, without a moment's hesitation.

"Four dollars!" echoed the countryman, amazedly, "why the dispatch operator at the Merican Onion office said he would send one to Shuffeld for 50 cents, ony thar wire was busted."

"Of course," said Henry, smiling blandly, "we would tell you the same thing if our wire was down. How can they send it, if their line is broken? But," he continued, after a moment's pause, "it all depends on whether you want to send a black or a red message"—and he waited for the granger to decide.

"I dunno the difrence 'twixt black an' red dispatches," the latter answered, looking decidedly uncomfortable and fidgeting around considerably.

"Well," said Henry, in a slow, doubtful manner, "I don't know that I ought to tell you, as it's a trade secret; but if you promise not to say anything—"

"Ye can jest bet yer life, I'll never squeal," interrupted seedy; "I'm one of the boys," and as he spoke he dived into the capacious vest pocket and produced half a dozen cigars. "Thar, try 'em," and he squinted knowingly as he spoke.

"Thank you," said our hero, proceeding to light one, mentally congratulating himself that he was "playing it fine." "Now," he continued, bending close to the customer's ear, "you must never, not even hardly ever, breathe a word of what I say to a living being."

"Ye kin depend on me," answered the victim in a low, confidential tone.

"Well, then," said Mr. Smart, "the black messages are those received by black operators and delivered by blacker messengers. They are paid good wages, as negroes will not work cheap; the black messages cost most. As for the red messages," and he dropped his voice to a still lower stage whisper, "they are delivered by young Indians—reds, you know; hence their name. The papposes are captured when young, and sold for a trifle to the company, who raise them at little or no expense, and finally train them to deliver messages. They cost but a small sum for maintenance, and this is why they send red messages at one-half rate. They are called red, not only because they are delivered by reds, but also because they are sent at red-uced rates in a read-y manner, and are read in the morning."

"Wonderful! wonderful!" said greeny in a

surprised and delighted tone, while the small group of listeners lusted themselves in endeavoring to eat their hats, coat-trails, etc.

Just here a diversion took place: a loud booming noise was heard on the wires. The granger opened his eyes in amazement and looked around in speechless wonder. Again and again the noise was heard, seemingly growing louder and fiercer every instant. At last he managed to ask what it all meant.

"Oh, that's nothing," smiled Henry, "it's only the Republicans having a big time in Washington over the late election. That booming is the cannonading; it comes quite plainly on the tel phone wire." The other occupants of the office were so seated that they could look through the window and see some section men unloading a car of wood near the office, and an occasional stick, striking the telegraph pole, caused it to jar the wires to vibrate, and that was what occasioned the "cannonading."

"Wall, wall," said the countryman, in a relieved manner, "if that thar aint the goldurned-est thing I ever heard on—it beats me, sure!"

In a few moments the conversation on business was resumed, when the customer concluded to send a red message. The necessary blanks were furnished, and, after much labor, a message was written and handed to Mr. Smart, who promised to send it immediately.

"I'll wait till I see it go," said our country friend, somewhat nervously.

"Very well," said Henry, and walking over to the telephone, he opened the door of the battery box and deliberately placed the message around the glass jar. Closing the door, he seated himself at the telegraph table and pounded vigorously on the closed key about a minute, when he turned to seedy with a self-satisfied and complacent air. "Your message has gone, sir," he said, with as meek and unblushing a look as he could assume.

"Ye don't mean to say it has gone a'ready?" inquired greeny.

"Yes, sir, it's in Shuffeld now," and Henry smiled patronizingly.

"Wall, 'pon my honor," gasped his customer, "but that litening is a powerful thing. I gess I'll send another."

The blanks being again placed before him, he dashed off and handed to Henry the following message:

Pu. 2.25—

J. R. Perkins, Sf.

Please come to Puree on first train, and take charge of this office. Mr. Smart, who resigns on account of not being able to secure victims enough for his practical jokes, in so small a place, will post you on your duties. A. R. SPEEDY, Supt.

"The look with which Henry concluded the reading of the message may be imagined—I shall not attempt to describe it. He was one of the most crestfallen youths I ever saw," and Mr. Speedy, who related the above to me, laughed heartily.

"Did you discharge him," I asked, "and how did you happen to try to catch him?"

"No, I had gone to Puree on some private business for the company (it was before the consolidation), and finding it necessary to assume a disguise, I hit on that of a countryman, which answered my purpose admirably. After I had got through with the business I went to attend to, I found I must wait over two hours for the first train east; knowing Smart's proclivity for joking, I determined to at once give him a subject for practice, and cure him of the habit, which I think I did. I did not discharge him, but removed him to a smaller office for two months, to think over his misdemeanor. He is one of our best men, now.—TOM TROY in *The Railroader*.

At the Thanksgiving dinner to the Western Union messenger boys, at Boston, Mr. Martin, receiver at the State street office, called out Master Thomas Melville, messenger No. 97, and in a few very complimentary words, presented him, as a token of the esteem and affection of his fellow messengers, with a handsome gold seal ring. The presentation was received with a storm of plaudits from the youthful company about the tables. Young Melville is the lad to whose happy suggestion the boys owed their first annual Thanksgiving dinner.



### The Telegraphers' Mutual Benefit Association.

The fifteenth annual meeting of the above association was held in Room 56, Western Union Building, this city, on Wednesday evening, November 16, President James D. Reid in the chair. About 35 members and delegates were present, representing 1,024 members of the Association.

In his annual address President Reid said that the year just closed, although not marked by any notable increase, had, on the whole, been healthy and prosperous. After a feeling tribute to the memory of the late Mr. Ashley, Mr. Reid referred to the Boyce claim, and said that a sum nearly equal to the full amount of the regular assessment was received and promptly placed in Mrs. Boyce's hands. "Nothing," added Mr. Reid, "could better exhibit the spirit which pervades the Association, and which, I trust, we will never lose."

The annual report of the secretary showed the membership in the second division to be 130, or five more than it was a year ago. The receipts from the first division during the year amounted to \$27,968.96. The membership of the Association at the last annual meeting was 2,138; new memberships and restorations during the year, 122; in all, 2,260.

During the same period there were 22 deaths, two more than the year previous, and 92 lapses by default of the payment of assessments; in all, 1,163; leaving a membership Oct. 31, 1881, of 2,144. The total receipts during the year from all sources were \$27,968.96, which with the balance on hand at the beginning of the year, \$2,973.14, brought the total up to \$30,942.10. Death claims under the first division during the year (including a small amount of refunded fees and assessments) amounted to \$26,021.00. The current expenses were \$1,673.44 (less \$95.75 chargeable to second division), leaving a balance on hand of \$3,343.41.

The reserve fund is represented by twenty-one \$1,000 bonds of the W. U. Tel. Co., the market value of which to-day is \$24,570, showing a large net profit since their purchase. The actual balance is somewhat in excess of the amount stated, there being nearly \$200 of advanced payments not included therein. The interest received from deposits with the Western Union Company was \$186.96; interest on bonds, \$1,470; total, \$1,656.96—or within a few dollars of the entire current expenses of both divisions during the year; so that, as heretofore, the Association is carried on entirely without cost.

The amendment to the by-laws proposed by Mr. Garwood, of Philadelphia, to strike out the word "three" in Section XI and substitute the word "one" was adopted. The section now reads: "The claims of the beneficiaries of persons who have been members in good standing for one year next preceding death shall be regarded as indisputable and shall be paid without question."

The motion of Mr. J. F. Morrison, of Baltimore, Md., to amend Section XIII of the by-laws to read, "There shall be accumulated from the surplus from assessments and income a reserve fund which shall consist of an amount equal to two per cent. of the entire amount of insurance provided by the Association," was rejected by a vote of 800 to 224.

Mr. D. R. Downer's amendment to Article IV of the constitution to insert the words "accompanied by the names of twenty-five members approving the same," after the words "in writing," was adopted, so that it now reads, "That proposed alterations or amendments shall have been presented to the secretary in writing, accompanied by the names of twenty-five members approving the same, not less than 90 days prior to the meeting at which they are to be acted upon," etc.

Mr. Young moved the adoption of an amendment providing that a regular assessment of one dollar a month be made on each member instead of as at present provided. The question was laid on the table.

Mr. Reid having declined re-election, Mr. Clar-

ence Cary, attorney of the Western Union Telegraph Company, was elected President; C. H. Summers, of Chicago, was elected Vice-President; Mr. A. R. Brewer, Secretary of the Western Union Telegraph Company, Secretary; Mr. S. M. Taylor, of the Gold and Stock Telegraph Company, Treasurer, and W. H. Young, of Washington, Charles S. H. Small, F. W. Jones and James Merrihew, of New York, and John E. Zeublin, of Philadelphia, Executive Committee. Messrs. H. C. Robinson, R. W. Pope and T. P. Scully were unanimously re-elected as members of the Auditing Committee. Messrs. H. C. Lockwood, A. H. Watson, P. J. Tierney, D. R. Downer, R. W. Pope and T. P. Scully were appointed a committee to provide for the proper reception of the members and delegates at the next annual meeting. A vote of thanks having been passed to the retiring officers and members of the executive and other committees, the meeting adjourned.

### Notes and Queries on Electricity and Electromagnetism and Their Applications.

BY T. D. LOCKWOOD.

Practical as far as possible;  
Theoretical as far as necessary.

Q. 166. How are the conductors in submarine cables ordinarily insulated?"

A. Only three substances have been found suitable as insulators for submarine cables—gutta-percha, india-rubber and Hooper's material, which is india-rubber peculiarly treated. Of these gutta-percha has been and is most frequently used, on account of its well-known durability, being practically indestructible under water. It is not so good an insulator as india-rubber, and, moreover, as it loses considerable of its insulating power in warm climates, it is, in such climates, to a great extent superseded by india-rubber, especially that of Hooper.

At least three layers of the insulating medium are always used and are necessary. The insulation of cables ordinarily improves after the cables are laid, all things being equal.

The insulation, per knot, of the Atlantic Cable of 1866, which is insulated with gutta-percha, is 340,000,000 of ohms; that of the French Cable of 1869, from Brest to St. Pierre, insulated also with gutta-percha, is 235,000,000, while the cable laid in the Persian Gulf in 1868, and insulated with Hooper's india-rubber, attained the wonderful insulation of 3,900 megohms per knot. Even this has since been exceeded by cables of later date, insulated by the same material.

Q. 167. What is the general construction of a submarine cable?

A. Submarine cables are generally constructed by imbedding a certain number of copper conducting wires—which may be either single wires or a strand of several small wires—in a good insulating material, such as gutta-percha or Hooper's india-rubber, applied in successive coatings. This, again, for protection, is surrounded with tarred hemp, and an armor, consisting of several strands of large iron wire, is wound outside of all. These iron wires, in several long deep-sea cables, are also covered with tarred hemp. The Atlantic cable of 1865, for example, contains a central conductor consisting of seven copper wires twisted together. This is covered by four layers of gutta-percha, while between each layer a compound, which not only aids the insulation but tends to unite the gutta-percha layers to each other, is applied. This is known as Chatterton's compound. Its component parts are gutta-percha, resin and wood tar. This core is then covered with a layer of hemp in five strands, well served with a compound of Stockholm tar, pitch, linseed oil and beeswax. The whole is then covered by ten strands of charcoal iron, each strand covered with hemp. Thus the copper wire is a conductor, the gutta-percha and Chatterton's compound being for insulation, and the hemp and iron wire for protection.

Q. 168. What is meant by the term "retardation?"

A. Retardation is the technical term given to

a certain sluggishness of action which is observed when electrical currents are sent into long lines—particularly long covered wires, such as underground wires or submarine cables, because such wires are much nearer the earth than overhead lines. It is caused by the inductive action which arises between the conductor and the earth.

We have seen by the answer to query 4 that an electrified body has an influence on all conducting bodies in its immediate vicinity, causing them to exhibit signs of electrification. This is a case in point.

The current sent into the conducting wire attracts by this induction through the insulating covering an opposite electricity from the earth; and this opposite electricity, in turn, attracts the current passing in the conductor, and tends to hold it where it happens to be; in short, to transform it from dynamic or current electricity to static or resting electricity.

Thus we see that the first part of every current sent is, if we may so speak, held or detained by the cable to balance the induced opposing electricity of the earth, and it is not until the conducting surface of the wire is charged that any current can make its appearance at the distant end; signals are thus delayed and the delay experienced is called retardation.

As overhead lines are so much further from the earth, they are much less troubled by electrostatic induction and its effects, and it has been estimated that in this country the charge retained by an overhead line of from thirty to fifty miles long is approximately equal to that of about one mile of ordinary submarine cable.

Q. 169. How may an aerial line be led into a way station?

A. There are several methods. In an ordinary telegraph line the usual way is to plant a pole directly in front of the window where the wires are to be entered, and run the wires from each side to a separate bracket and insulator, from thence looping them in.

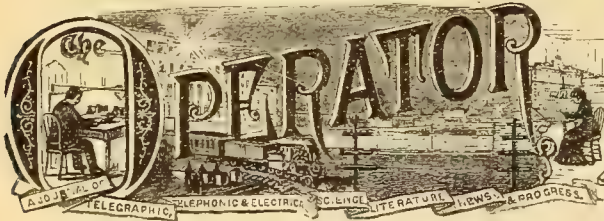
For short lines, such as those in cities, which are frequently housetop wires, a mode often adopted is to run the wire to a batten or counter-brace overhanging the eave, fasten it there to a hook insulator, and then drop it down to a block of wood beveled on one corner, which is spiked to the wall, close to the window where an entrance is to be made. Another way is to divide the line by the insertion of a non-conducting substance, such as a block or ring of glass or rubber, and to attach the conducting wire to the main wire on both sides of the insulator. To conduct the wires from the point where the line wire terminates there are also various plans in use. If the line is not a new one, but is already employed, a cut-out must invariably be applied across the new loop until the job is complete; that is the two wires of the loop must be connected by a short wire. The ordinary line wire may be led into an office if a hard rubber tube is inserted into the entering hole. The tube is fastened in the hole, with its outer end pointing down, so that no moisture can enter, and the wires then passed through and fastened on the inside. Another way often used is to terminate the line wire at the hook, or insulator just outside the entering hole, by twisting it around the hook, and then twisting it back on itself. About four inches of the line wire outside of the twist joint is then brightened, and a piece of kerite or rubber-covered wire stripped at the end, for about eight inches; the bared wire is also made very bright and is then, commencing at the lowest point, carefully and tightly wound around the brightened part of the line wire. The covered wire is finally led through the hole in the window or wall and secured in any desirable way on the inside.

It is well to know that gutta-percha-covered wire is not suitable for this kind of work unless well covered with tape soaked in preserving mixture consisting of wood tar, gas tar and slacked lime, because the gutta-percha is soon rendered useless by the action of the air.

Sometimes, where many wires enter a building, a cupola is built for their reception. On entering, they are led to binding posts, from whence they are directed to any desirable point.

This work of leading in wires is very important, as, if unskillfully or negligently performed, escapes are very likely to occur in the window-casing.





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## NOTICE.

So many subscriptions expire with the year that the renewals about that time occasion considerable extra work in this office. Those whose subscriptions run out on or about Jan. 1 will confer a great favor by **FORWARDING THEIR RENEWALS NOW**. They will lose nothing by so doing, as the time they pay for will be added to their present subscription, whatever time it may expire. They will also save themselves the possible annoyance of missing any of the numbers. **TRY IF YOU CANNOT GET TWO OR THREE OTHER SUBSCRIPTIONS TO SEND WITH YOUR OWN.** An order for some of the books we publish would also be acceptable.

## TELEGRAPHIC ORGANIZATION.

The recent triumph over the Post-office Department of the organized telegraph operators of England emphasizes more fully the recollection of their dismal failure in the strike of 1871, the tenth anniversary of which will occur this day week, the 8th inst.

Their action at that time was hasty and ill-timed, and, as a consequence, even with the moral support and sympathy of the brokers and general public in their favor, they broke ranks in the short period of four days, and were beaten. Their action was right in the first place in banding together and exhibiting a little corporate self-consciousness, for power can proceed only from unity, but their great mistake was in permitting their final action to be precipitated, long before they were ready, by one of the most tyrannical, unscrupulous and vain-glorious officials that ever stooped to manoeuvre, and dicker, and bargain in thorough skin-flint style—they call it “Managing”—in a telegraphic bureau. Their experience with Frank Ives Scudamore was bitter, but it has proved to be worth the outlay; and, while we can obtain it all for nothing, it is just as well that he who runs may read.

In England, during the past summer, the dispute was just as acrimonious as, and the attendant circumstances were not any more fortuitous than, in 1871, but the dignity, self-restraint and prudence shown on this occasion by the operators there, as a body, has commanded the admiration of us all.

Many things have been learned since 1871. It has been admitted, primarily, that employer

and employé should go hand in hand, each working for the best interests of the other; and it has been fully recognized that any ill-advised attempt to increase or decrease hours of service, or to readjust the prices of labor, upward or downward, without due reference to the only law which can ever obtain in these matters—the supreme law of supply and demand—must result only in dismal failure to the party attempting such absurd impossibilities. It has been realized that a strike is a monstrous imposition upon the public, arising always and solely from over-zealous officials, like Mr. Scudamore, on the one side, and reckless agitators on the other, and that such an imposition upon the rights of the public can never more be tolerated.

Acting upon this dearly-bought experience, our British cousins saw that only quiet and sensible men—men of good judgment, yet endowed with the grit to speak their mind, when occasion required it—took the lead. There came a difference, but the pressure, though tremendous, was so gently applied that it was scarcely noticeable. There was no irritation, except that shown by “my Lords,” who squirmed considerably; and, while accepting “the proposals which you submit to them for improving the pay and general position of the telegraphers,” publicly warned the telegraphic force that “my Lords cannot shut their eyes to the means by which the claims for this improvement in the terms of service have been urged upon the Government,” and that henceforth the wrath of “my Lords” should fall heavily upon any employé “taking part in any extra official agitation.” Of course, “my Lords” had to let themselves down easily; but still there was no wild hurrah in the ranks, no bluster and no threats that were not backed up by action; while that perpetual bane of telegraphic organization, the loud-mouthed zealot with his war-whoop, his helter-skelter, Tommy-make-room-for-your-uncle air—who is usually the first to scamper off and crawl under shelter when fire is opened—was relegated to the rear, and a wholesome check was put upon his pernicious impulses.

ONE of the greatest evils in the telegraphic profession is the existence of the so-called telegraphic colleges, one of which—at the Cooper Institute, in this city—had a splendid advertisement in the editorial columns of the last number of the *Journal of the Telegraph*. The editor of the *Journal of the Telegraph*—when it last had an editor—knew, and everybody else in the business knows, that there is not now room enough for the proper advancement of the vast army of messengers and check clerks who are studying within our ranks, and that the multiplication of schools for teaching telegraphy is simply a heartless fraud upon the innocent students, and a standing menace to the interests of the public at large. This is the secret of the attacks of the New York *Herald* and other influential journals upon the Western Union Telegraph Company—the only company in America which seeks to attract unpracticed, and, of course, cheap labor into its ranks; that advertises to receive as students boys and girls utterly unprepared by instinct and previous education to commence the study of telegraphy, and to crowd them through to “perfection” in—as its official organ enthusiastically points out—six months; or, to quote literally from our somewhat dilapidated and down-at-heel contemporary—the aforesaid alleged *Journal of the Telegraph*—“from the first Tues-

day of October until the first of May, which period is deemed sufficient time for graduation.” We commend this to our cosmopolitan contemporary, the *Herald*. This style of “graduation,” while temporarily profitable to the Western Union Telegraph Company, is a disgrace to telegraphy in general. The standard of ability can never be lowered in any profession—not even on the score of economy—without lowering the self-respect of each member of that profession, as well as jeopardizing the interests of its clients. The introduction of quacks with six months’ training, which the *Journal* says is “deemed sufficient,” must bring the entire company into disrepute, and result in the total extinction of that experienced and thoroughly trained class of operators, of which it was the delight of that great and unparalleled leader of the telegraph—the late William Orton—to boast. For those who remain in the business we think that the time has arrived when a concerted, simultaneous movement should be made to elevate our profession to its proper sphere.

As far as we can learn, that corruption fund, \$250, which Secretary Peck, in his open letter of October 19, said he had “on special deposit in trust for the Western Union Telegraph Company,” has not yet been called for by the latter company, nor has our hint been taken to turn it over to the Telegraphers’ Mutual Benefit Association. Surely President Evans will not allow any one in the Mutual Union service to retain bribe money; Gen. Eckert is too chivalrous to think even of touching it; Mr. D. H. Bates is altogether too utterly utter to be concerned with anything immoral, while the Judas of the whole transaction has received his thirty pieces of silver, and has gone on his dismal way. Giovanni Purrisimo Morosini would not object, we know, to taking in \$250 that might be lying around ownerless, but since he has done no tall swearing lately he cannot lay claim to it. There is no alternative, then, but to let the poor, toiling operators have the benefit of that \$100 bill, numbered A 80,153, series of 1878; and the three fifties, numbered respectively Y 49,067, series of 1869; E 175,733, and E 321,772, both of series 1874. That \$250 must be watched.

Now that the Mutual Union is getting fairly to work we hope to see them demonstrate, by a series of promotions for merit and seniority in the service, that they realize the fact that the interests of the company and the operators are identical, and that weal or woe for one means prosperity or adversity for the other. This is a plan which the Western Union has often attempted to execute, and has as often failed in. Its consummation will go further than any other influence in bringing success to the company that practices it. It will stimulate the men to more cheerful and careful labor; it will encourage the lowest employé to qualify himself for the highest position, to which, in his long night of obscurity, he may ever look as his guiding star, and it will result, on the whole, in a better and more intelligent class of men remaining in the business.

THE Western Union, having a lease of the office formerly occupied by the American Union in Chicago—directly opposite the W. U. office—wanted to rent it, but, fearing that it might possibly fall into the hands of an opposition telegraph company, has kept it idle ever since the A. U. moved out. About two weeks ago an alleged “insurance company” offered to relieve



the Western Union of the expense of the white elephant by leasing it. As this would also put the office out of the reach of rivals, a bargain was speedily struck. It now turns out that the "insurance company" is none other than the detestable Mutual Union Telegraph Company, and both telegraphers and the public are enjoying a hearty laugh over the matter, while the Mutual Union has secured the office and location in Chicago it has been after so long.

CLAIMANTS for the original invention of the telephone are multiplying, and we may soon have a big crop of lawsuits over it. Since that will necessitate a critical examination of the records, it will be well for each litigant to possess himself of a copy of that excellent work, "Tales and History." There they may find an account of the telephone invented in China, by Kung Foo Whing, nearly one thousand years ago. Two hundred and ten years ago a whisper had been heard at a furlong's distance, "by the help of a distended wire." Then there was the "telephon" used in 1853, and the telephone of Mr. John Cammack, of Manchester, England, exhibited in 1860, as well as that of Philip Reiss, of Hamburg, introduced in 1861. Bell, Edison, Gray, Reiss, Cammack and Kung Foo Whing will very likely addle the heads of the judges when this thing gets into court.

THE annual report of the Secretary of the Telegraphers' Mutual Benefit Association shows the association to be in a prosperous condition. Although the number of members has not increased very much during the year, the association has, at least, not retrograded any in that respect. The total receipts during the year were \$27,968.96, as compared with \$19,708.49 during the previous year. The expenses were \$27,518.69, against \$17,548.43 in 1880; leaving a balance on hand of \$3,343.41, as compared with \$2,160.06 the year before. The amendment to the by-laws providing that claims shall be indisputable after the member has been in good standing for one year—instead of three as formerly—should make agents and the Executive Committee exceedingly cautious as to the risks they accept.

THE strike of the Mutual District messengers at the New street office, in this city, on the 22d ult., is not to be held up as an example to the senior members of the profession. The action of the boys in resorting to extreme measures upon so small provocation cannot be commended, although the tender years of the lads may serve as an excuse for their conduct—an excuse which by no manner of means can be pleaded for the official stupidity of "Justice" Kilbreth, who, with all the pomposity of a backwoods magistrate, sentenced three of these boys, all of tender years, to ten days' imprisonment each. A Judge with more heart and brains would, in this country at least, have given young America a severe lecture and then dismissed him.

THE idea of reproducing faithful pictures of prominent members of our craft seems to be gaining ground. We had recently to compliment our esteemed London contemporary, the *Electrician*, upon its very creditable engraving of the late Col. Glover, and now we have further reason to express satisfaction upon seeing that the issue of the *London Telegraphic Journal* of Nov. 5, just to hand, contains a remarkably fine engraving and a well written biographical sketch of Mr. Thomas A. Edison. All this is decidedly enterprising, and, while it enhances

the first cost of the journal, it is very popular with the reading public; and, in the light of our own experience, we may say that it is profitable in the end.

IN these days of salary scalping and official idiocy it is not often that a manager is found so popular with his subordinates as to have his removal bring on a strike. This was the case, however, with Manager Henry E. Wallace, of a Mutual District office in this city, who seems to be intensely popular with the boys. Striking for such a frivolous reason is to be deprecated, but devotion like that should be fostered in our ranks, where selfishness, conceit and oppression are now so conspicuous. In the spirit of their action, at least, we wish the boy were father to the man.

THE melancholy crank, Welles, who recently sent threatening letters to Mr. Jay Gould, was commonly believed to be insane. But when the jury of experts read his letter to Brother Jay, in which he said, "You have robbed the rich and the poor, the father and the fatherless, the widow and the orphan, indiscriminately, of their last dollar, and through your villainy have brought ruin and destruction upon thousands of thousands of families," they unanimously voted him quite sane, and remarkably observant and level-headed at that.

WE are glad to see an appreciation, on the part of the merchants using the telegraph, of those faithful little lads who carry their messages. It is no wonder that the turkey dinner given to them at the Crawford House, Boston, on Thanksgiving, was unanimously voted "im-mense" by the juvenile guests. The small boy is a great institution, and there is nothing like a rousing dinner for bringing out his good qualities. The small boy never forgets his patron, and we shall be much mistaken if the Boston merchants are not fully and quickly repaid for their thoughtful liberality.

TELEGRAPHERS in general celebrated Thanksgiving Day in the most appropriate style, as their continued prosperity warranted them in doing. One of them, however, Mr. E. L. Nowell, of the Boston & Maine depot at Salmon Falls, N. H., after indulging in too much turkey, celebrated the day by shooting Mr. George W. Wentworth in the neck and thigh. The victim will probably die, and this bloodthirsty telegrapher may then transfer his accomplishments to another line—with a noose on it—on which a "ground" is unknown.

THERE is some prospect now of the Postal Telegraph Company getting down to practical work. On Tuesday evening last, Nov. 29, a conference of capitalists interested in the Postal Company took place in one of the parlors of Delmonico's restaurant, on Fifth avenue. It was stated after the meeting that \$1,000,000 had been subscribed to the capital stock of the company, and that work on the Postal lines will be vigorously pushed forward. It is claimed that matters are now in such shape as to make early and definite results of the proposed work certain.

SINCE we have never failed to find fault with Mr. Jay Gould when his policy has seemed to be against the operators, we shall miss no opportunity of bestowing the much-needed word of praise when we are justified in doing so. Since Mr. Gould has become President of the Manhattan Elevated Railway, all operators on that line have had their pay increased from \$2 to \$2.25 per day. This is, at least, one meritorious act

which can be written to the credit of the great modern Croesus.

ALTHOUGH the Edison electric light has not yet quite reached that point where it can be seen in general use for household illumination, still those who ought to know feel confident that it soon will. In the meantime, telegraphers and electricians generally will read with interest in another part of the present issue the biography of the now world-renowned inventor who has done so much to make electric lighting a practical success.

A RECENT interruption in the cable from England to the Island of Jersey, in the English Channel, appears to have been caused by a somewhat unusual kind of trouble. The cable parted near the shore; but instead of an "earth" trouble being caused thereby, the gutta-percha closed over the broken end and sealed up the break, thus producing a "disconnection."

IN opening for business the Mutual Union has wisely steered clear of a possible war of rates, and charges the same tariff as the Western Union. This is a good beginning, for it is really not cheap rates that the public want so much as good work. If the latter be uniformly rendered no one will grumble about the existing prices.

THE telegraph in England has suffered tremendously from unusually violent storms this fall. On the 14th of October, and again on the 23d of the same month, the telegraphic plant of the country was seriously damaged—on land by trees falling upon the wires, and at sea by the anchors of drifting vessels breaking the cables.

THERE must have been a good deal of satisfaction for the Mutual Union in the spectacle of a gang of Western Union pole-chopping fiends laboring, under the law's high pressure, to re-erect forty poles belonging to the Mutual Union, which the said ruffianly gang were fairly caught in the act of devastating.

ENGLAND'S blind Postmaster-General has added another feather to his telegraphic cap. You can now write a telegram on ordinary note-paper, stick on sufficient postage stamps to pay for its transmission, and deposit it in a street letter-box. It will be sent by telegraph as soon as the box is emptied in the usual way.

ON MONDAY, the 26th inst., and Monday, the 2d prox., Western Union office hours will be from 8 to 10 o'clock, A. M., and from 4 to 6 o'clock P. M., except at repeating stations and principal offices, which will be kept open as usual, but with such reduction of force as circumstances will permit.

THE American Cable Company seems to be out of luck. After laying its first cable this fall, communication was broken. Then, on the 16th inst., its steamer *Faraday* broke her engines and returned to Falmouth under sail.

THE annual meeting of the stockholders of the Southern and Atlantic Telegraph Company will be held in this city to-day.

THE Mexican Telegraph Company has increased its capital stock from \$1,000,000 to \$1,200,000.

WESTERN UNION stock is quoted at 85½. Last issue it was 86½.



### A Model Telephone Exchange.

So much has been said and written with regard to the telephone exchange at Providence, R. I., and of certain changes and improvements which were being introduced there, that we are glad to be able to give the telephone readers of THE OPERATOR a complete and carefully prepared account of what the Providence gentlemen have accomplished, and the workings of the exchange under the new order of things.

It must be remembered that in the arrangement of the exchange and the manner of making connections a radical departure has been made from any system hitherto adopted in telephone exchanges. The new system, which gives universal satisfaction as regards both speed and accuracy, is being patented by the inventors, Messrs. J. W. Duxbury, Superintendent, and Henry W. Breckenridge, one of the electricians, of the Providence Telephone Company.

The Providence company has a central office in Providence, with eleven hundred subscribers, and also offices in Pawtucket, Woonsocket, Attleboro, North Attleboro, East Greenwich, Olneyville, Warren, Bristol and Pascoag, with a total of about sixteen hundred subscribers. These are allowed unlimited use of the wires in the whole territory; and as Providence is the business centre of the section in which it is situated, are virtually sixteen hundred subscribers centred in the Providence exchange.

The switch-boards adopted were manufactured by Messrs Post and Co., of Cincinnati, and have been fully described in their advertisement which appeared in THE OPERATOR of Nov. 1. They have given perfect satisfaction in every particular and coupled with various devices for expediting the work of the operators which have been added in Providence, have reduced the work of the central office to a minimum.

An average total of twelve thousand answers and connections is made daily in Providence offices, while the time of making connections averages a fraction over a minute between all points in the territory of the company. Probably the most convincing proof of the success of the new system is the fact that before it was adopted there was universal dissatisfaction among the public in consequence of poor service, with constant orders to remove instruments; but since the change was made not an order to take out an instrument growing out of unsatisfactory service has been given, and applications for instruments are made daily, without solicitation on the part of the company.

The system, as will be seen from the following explanation, is notable by reason of its simplicity and absence of confusion. There is no necessity for conversation between operators, except to rearrange something which has been incorrectly done, and a special circuit is provided for that purpose. There are no boys required, no tickets are filled out until connection has been made, and the subscriber gives his order directly to the operator at the switch-board of the party with whom he wishes to converse. Above all, the system is equally practicable whether the wires centre in one room or in several rooms or buildings at any distance apart. The wires are of all kinds—special, bi-polar, four party, clock and battery wire—and each switch-board is so arranged that a wire of any description may be connected into it. In fact, each switchboard is the facsimile of every other, with the exception of the names upon the list of subscribers.

There are thirteen switch-boards of twenty-five wires each, four of fifty wires and one of sixty wires, arranged on three sides of the operating room about eighteen inches apart. They are the standard pattern manufactured, by Messrs. Post & Co., as regards annunciators, cross bars, dials, etc., but instead of the calling apparatus and the means of connecting in the central office telephone usually applied in the Post switches, each wire on every switch-board passes through a calling key and a Snell spring jack before reaching the ground or bar leading to either of the switches in the room, in such

manner that the subscribers can be called and the switch telephone connected without breaking circuit or interrupting conversation when two subscribers are connected together. In fact, there is no ground ever on the wires in the central office when two wires are connected through. This has been found to be absolutely essential in consequence of many long lines extending from the Providence exchange, as the results were very unsatisfactory to subscribers under the old system of having one side of the office telephone constantly grounded. Two bars on each switch-board connect directly with every other switchboard in the operating room. Near the ends of the two bars a key is placed, which upon being depressed drops an annunciator at the other switch-board with which the bars are connected, showing the operator at the latter board that a connection has been made upon one of the two wires extending from the switch-board designated by the annunciator, and a peculiar arrangement is adopted whereby there is no question as to which of the two wires is used. The last mentioned annunciators are placed upon an extension fitted to the sides of the switches, and are no way connected with the lines leading from the central office to the subscribers.

The operation of the system is as follows: Suppose a call comes on line "5," switch-board "A," the operator throws the office telephone into circuit by means of the Snell jack through which line "5" passes (the pin connecting line "5" with the ground bar not being removed) and ascertains the wishes of the party who has called. Suppose the person desired is on line "20" switch-board "A," the operator, by means of the key through which line "20" passes, calls the desired subscriber, connects in the telephone by means of the Snell jack upon line "20," and when the subscriber answers, removes the two pins from the ground bars on the lines "5" and "20" to any unoccupied local bar, tells the subscribers to proceed with the conversation and reverses the Snell spring jacks, which takes the office telephone out of circuit. To ascertain when the conversation is finished, the operator has merely to connect the office telephone by means of the Snell jack on either line "5" or "20" without breaking the circuit or interfering with the conversation by grounding, and if the wire is not in use to place everything in its normal condition.

Suppose the party calling on line "5," switch "A," wishes to converse with some one on line "30," switch "O." After requesting the party who was called to wait a second, the operator at "A" switch transfers the pin from the ground bar of line "5" to the upper of the bars leading to "O," and presses the key to the left of the bar marked "O," which drops an annunciator at "O" showing the letter "A." The operator at "A" disconnects the telephone and has nothing further to do with the connection. The operator at "O," observing the annunciator marked "A" fall, immediately, by a peculiar device, connects the switch telephone upon the wire leading from "A" and asks the subscriber what is wanted; in response to which inquiry the subscriber gives his order a second time, and being now in direct communication with him, the operator at "O" proceeds to call up the party desired on wire "30," and tells them to proceed with the conversation, or can inform the first subscriber directly if the party desired does not respond to the call. The operator at either switch ascertains if conversation is finished by use of the Snell jack upon the respective lines.

Various devices are adopted to perfect the system; among them the following: The wires connecting the switches together are grounded when not in use in such a manner that if the operator at "A" has connected his subscriber's wire direct to "O," and the operator at "O" fails to respond at once, the subscriber still can call the operator at "O," as his wire is grounded on the bar at "O," which leads from "A," upon which he is connected. Practically, no circuit is left open for a moment, as there is always a ground in one of three places: First, the ground bar, when the wire is in normal condition; secondly, the ground at the end of the bar in the second switch-board, after the first operator has made the connection with the second board and before the second operator has answered; and thirdly, at the station of the party called for, after connection has been completed. To avoid neglect on the part of the second operator, the

annunciator circuit between switches is so arranged that the operator at the first switch can continue to signal the second operator at will by merely depressing the proper key, and thus insures attention to the call; while, if there be any misunderstanding, special circuits are arranged whereby the operators may use their regular switch telephones to converse between themselves. Indeed, all conversation between operators other than over these special circuits is prohibited, and in practice there is found little occasion to use this device, as each operator has a complete list of subscribers with the switch letter set opposite the respective names, and, while she becomes familiar with the switch letter of the whole list, has, of course, only to remember the "calls" on her own board. It was feared at first that subscribers would object to giving the order twice. Experience, however, is the reverse of this, and the plan is especially commended as it enables the party calling to know what is being done at the central office and judge of the celerity with which the desired connection is made.

As the operators never leave their tables, and no tickets or other written orders are carried from switch to switch, it is evident that the system will work equally well whether the switch-boards are a foot or two miles apart. For exchanges of one hundred wires, or where more than two switch-boards are required, it cannot fail to give satisfaction, as avoiding all confusion in the central office and being the most speedy and correct means of giving orders and making connections; in fact, it is almost a duplicate system, and in an exchange of mixed wires has the advantage over a duplicate system that each operator has to remember only the calls on her own board. It is equally applicable to an exchange of two thousand wires as it is to an exchange of four hundred wires, it being necessary only to provide an additional switch-board for each 25 or 50 wires, as the case may be. The system is being patented in the leading countries of the world, and has been emphatically indorsed by every one familiar with telephone exchange systems who has examined its practical working. Mr. Fredk A. Gowen, who has made a critical examination, pronounces it the most complete system in the world.

Two devices adopted by the Providence Company, for looping the central telephone office in circuit without grounding, are worthy of notice. The first, which has been applied to nearly all the switch-boards, is being patented by Mr. Henry W. Breckenridge. It is an adaptation of the Snell spring jack, which has been previously described in these columns, and consists of a cam, which can be moved back and forward by means of a lever, two springs placed in front and back of the cam, respectively, and a metallic bar or connection, against which one of the springs comes in contact when not connected with the cam. When the lever is turned forward (its normal position) the cam, which constitutes one terminal of the line, comes in direct contact with the spring, which is the other terminal of the line, thus completing the circuit. When the lever is turned backward the spring upon which the cam rested in the first position follows the cam in its backward motion until it (the spring) comes in contact with a bar which forms one leg of the telephone circuit. At the same time the cam is brought in contact with the spring on the back side, which forms the other leg of the telephone, thus causing the current to pass directly from the cam (line) through the spring to the telephone, thence to the bar against which the spring rests, which is the other end of the line. By this arrangement both legs of the telephone are applied to the line before the original line circuit is broken, which is obviously a very important feature.

The second device for this purpose is the invention of Mr. J. F. Hedge, an employé of the company. It has been applied to some of the wires in the Providence office, and to the entire boards in several of the smaller offices. It consists of two pairs of springs for each wire, one pair being set entirely within the other, in such a manner that by the insertion of a non-conducting wedge between the outer pair of springs, which are in the main wire circuit, the springs are pushed apart and against the two inner springs, which are the terminals of the telephone circuit, thus causing the main current to pass through the telephone until the



wedge is removed, when the two outside springs close together in normal position. Both devices work very well, and there is little or no difference in the expense.

The whole exchange system is easily applicable to switch-boards of any manufacture, and it will repay the larger exchanges or those contemplating alterations to examine it thoroughly. Visitors are cordially welcome at all times, and any information will be cheerfully furnished upon application to J. W. Duxbury, Supt. of the company.

#### Brudder Johnson on 'Lectricity.

"Speakin' ob 'lectricity," said the Rev. Plato Johnson in a moment of confidence to our special reporter, "it 'pears to me dat dare ought to be some way foun' out so dat you need'n come into personal contact wid de current. Mr. Edison tole me it can't go froo glass; but den, 'don' yer see, a man can't cork hisself up in a glass bottle all de time, so he need'n be struck wid lightnin'. De fac' is, an' dat's wat I tole Mr. Edison, 'lectricity, in de present stage ob progress, is like a wild hoss ob de prarys wat has been caught, but nobody has put de harness on him yet. Now puttin' de harness on is a job wat not ebberybody is willin' to undertake. You 'proach de front end ob de hoss wid de kindest intentions, wid a bridle in yer han', an' unless yer wants to die sudden, wid considerable caution. Still, you find a look in his eyes dat don' give you de 'pression dat he returns yer 'fection. You muss be able to step about putty lively, cos a animule ob dat kind has de 'bility to turn roun' an' present de odder end, de total 'pravity end, in de twinklin' ob an eye, an' ef he does, wy, you is likely to fin' yerself trabblin' froo space like a 'spress train bein' time, an' wen you land on de odder side de fence you is mity glad somebody build dat fence, an' put it rite down 'tween you an' dat hoss. You feel as though you wish dat hoss had nebbe been born, or as if you wished hosses, specially wild ones, was made wid only two legs, and dose both front ones. Now, den, dat's de way wid lightnin'. Some people is specially 'dapted to handle it, but I don't 'long to dat class. I kin preach an' show de sinner de bottomless pit till he smells de brimstone all ober de church, but wen it comes to chain lightnin' jest cotched an' runnin' loose without any halter on, well, a I can say is dat I'd rather be 'scused, cos I has a large family, an' dey needs me a little longer on de yearth.

"De odder day Mr. Edison he says, 'Brudder Johnson, I show you de 'fect ob dis current on one ob de lower orders ob creation. You see dat cat yander?' I says 'yes, Mr. Edison, I certainly sees a cat dere, an' a beautiful Moltese it is, too.' I went up an' stroked dat pore cat in a 'fectionate sort ob way, till at lass Mr. Edison say he were ready. He put a bowl ob milk down on de floor, an' den he put one wire in de milk and leff de odder on de floor where de cat be sure to tread on it, you see? Dat Moltese 'proached dat milk kinder slow like, ez though she 'spicioned dat Mr. Edison wasn't a man to be 'tirely trusted. At lass, just though she come to de 'clution dat no mortal man could be mean 'nuff to play a trick on a pore cat, she began to lap dat milk. You know what happen? You ebber see such a ting as dat? Well, my sympathies was wid de cat, but I couldn' do nothin.' De 'speriment was in de interest ob de science ob de nineteenth century, an' I rather de cat take de dose dan me. De minnit de tongue tetch dat milk about a hundred thunderbolts went rite through dat cat. I never was so scart for a few seconds in all my life. I heard a meaw dat sounded like a anvil chorus ob all de Moltese cats in de universe. Wid ebbery hair standin' on end, wid her back all humped up like a camel, wid her tail es large es de brush ob a fox, dat Moltese was in de air 'way up 'bove our heads. Wen she struck de ground she continued de concert an' broke for de doores though she had no hopes ob life so long es she stayed in dat buildin'. 'You see dat?' says Mr. Edison. 'Well, I says, 'I thought I seed somefin in de air for a minit'. I guess dat cat is convinced dat homoeopathy is de only way to take 'lectricity. Will she ebber come back, do you tink?' 'Nebber,' says Mr. Edison, 'nebbber.' 'Den,' says I, 'de man wat says dat a cat aint a reasonable human bein' don't know what he's talkin' 'bout. An' ef de cat knows nuff nor to try dat

ting a second time, do you tink I knows less dan she does? I shall foller dat cat an' let lightnin' alone for de futur' an' keep my rheumatiz.'"

#### Look Well to What You Eat.

That the ordinary diet of to-day does not contain the necessary elements to keep the body and mind in health, under the strain of this, the 19th century, is not as generally understood as it ought to be; yet it is a very important and well-established fact, and one that is exhibited in the tired look upon the face of almost every man, woman and child we meet. The importance of securing to the diet the necessary repairing elements that our business or profession demands, together with a condition that insures the entrance of these elements into the blood, even in the presence of a weak and debilitated digestive function, cannot be over-estimated. The undersigned manufactures a series of food from the three great life staples—beef, wheat and milk, especially and scientifically prepared to repair the loss of energy incident to any business or profession, thus securing health to both body and mind. The foods do not conflict with any medicine, and are exceedingly palatable, small quantities taken with the meal, a fifty-cent package furnishing the desired elements to an adult for one week. Packages from fifty cents to two dollars. Write for free pamphlet, and give briefly condition of stomach, also occupation, and we will inform you by return mail of the kind of food required, with prices, etc.

Address, THE BLANCHARD MFG. CO.,  
—Adv't. 27 Union Square, N. Y.

#### Telegraphers Should Organize.

To the Editor of The Operator:

SIR:—Labor and capital are allies. Therefore, it is necessary that they should be on friendly terms. Each is dependent upon the other. Neither should be allowed to encroach upon the rights of the other. But it is not so in the telegraph business, at the present time, simply because the operators have no organization for the protection of their rights, like the locomotive engineers, stonecutters, and other workers.

The directors have been active in watering their capital and devising means for the reduction of expenditures in every way possible, in order to pay dividends on the inflation; while the operators have been practically idle. As suggested by "Bon Soir," recently, the time for action has arrived and should not be neglected. But the individual action he urges cannot accomplish the purpose. Therefore, the operators of the country must organize in self-defense, or submit to further oppression.

In 1864 the capital of the Western Union Telegraph Company was watered from eleven millions to twenty-two millions, by declaring a stock dividend of one hundred per cent. These added millions were pure water, and soon became a serious drag upon the company, the full weight of which was realized when the Western Union came to acquire the leading telegraph lines of the country. Thus, in the process of consolidation, the Western Union capital had to be increased to forty-one millions; when, in fact, but for the watering process, it would have been at most twenty-five millions.

With a capital sixty per cent. in excess of a just valuation, it became necessary to resort to the most vigorous retrenchment, the chief burden of which had to be borne by the employes. These measures enabled the company to pay small dividends up to and including 1869, when they ceased until 1874, after which time the earnings rapidly increased. In 1879 a regular yearly dividend of seven per cent., an additional cash dividend of one per cent., and a stock dividend of seventeen per cent. were declared, making a total dividend of twenty-five per cent. for that year. The six millions or more composing the seventeen per cent. stock dividend had been held in the treasury, and should have been canceled to reduce the over-capitalization. But as it was not done, the watering process repeated in the last consolidation was thereby rendered proportionately greater than it would otherwise have been, and now they have the enormously inflated capital of eighty millions upon which dividends will be exacted. Judging the future by the past, we have no assurance that this water-

ing of stock and absorbing of rival telegraph lines are to cease.

With an honest capital based upon the actual cost of the Western Union property, for which fifty millions is a high valuation, the company could then earn handsome dividends, keep their property in first-class condition and pay their employes just compensation, proportionate to the ability, faithfulness and labor required in the performance of good service. At present operators, with few exceptions, are overworked and not sufficiently paid to enable them to live comfortably; and consequently many of them are physically unfit to perform their arduous duties properly. Is it right that they should be thus oppressed to earn usurious interest on fictitious capital? Although the officers of the company claim that they are not reducing salaries, they have been doing so for years past, in pursuance of their unjust policy of filling vacancies by promotion from lower grades without a corresponding increase of salary, so that a promoted operator doing the same work as his predecessor seldom or never succeeds in getting the same salary; and by that means the company is constantly reducing salaries. Such a policy is certainly not calculated to call forth the latent energies of embryo operators, since it offers so little inducement for them to earn promotion by becoming experts.

The true interests of the employer and employee should be identical, and when the latter is properly compensated his interest in his work naturally increases and makes his service of proportionately greater value. This principle has been ignored by the Western Union. Is it likely that they will change their policy in the interests of justice unless they are compelled to do so? The organization of Locomotive Engineers has demonstrated that organized labor can not only protect itself and secure just compensation, but can also increase the efficiency of the service and command respect. Have telegraphers energy, faith, patience and courage enough to organize for their protection and advancement, or are they content to submit to whatever organized capital may dictate?

If they "will organize," it should be for the purpose of establishing and maintaining a just basis of compensation. The service should be graded and salaries adjusted to each grade. Promotion to a higher grade should be invariably accompanied by the salary for that grade. No discrimination ought to be made on account of sex. Female operators should receive the same salary as male operators in the same grade.

I believe that the application of these principles would remedy the existing evils to which operators are at present obliged to submit; and would undoubtedly be the means of improving the efficiency and elevating the dignity of the profession.

JUSTITIA.

NEW YORK, Nov. 8., 1881.

#### Commissions of the G. N. W. Agents.

To the Editor of The Operator:

SIR: I have noticed in your interesting paper lately a great deal of complaint about the Western Union reducing salaries in nearly all parts of the United States, but have very seldom, if ever, noticed any remarks derogatory to the Montreal Telegraph Company's management. You, of course, knew that the universal tariff of the M. T. Co. from one office to any other in the Dominion was 20 and 1, regardless of distance. Nearly all of the agents worked on a commission of 25 per cent. on amount of business done by their respective offices. This was the case before the amalgamation which has proved so unsatisfactory to all persons doing business over the wires, and is likely to prove detrimental. The first move made by the Great Northwestern Tel. Co., after assuming control of the M. T. Co.'s lines, was to raise the tariff from 20 and 1 to 25 and 1 and do away with red or night half-rate messages. This looked at first like proving beneficial to the agents, nearly all of whom work on a 25 per cent. commission, and the more so when instructions were given to check direct with Western Union offices. But, alas! before the hopes could be realized the Great N. W. issued circulars stating that commission would only be allowed at 20 per cent. on Great N. W. business and 8 per cent. on business done with Western Union offices. Heretofore, on through messages—Boston, for instance—the tariff was 20 and 20, so that agents got a commission of 25



per cent. on 20 cents for this line—5 cents—whereas now they check direct with Boston, tariff 40 cents, commission 8 per cent., making 3½ cents—a loss of 1½ cents on each message for the agent, and consequently so much gain for the G. N. W. treasury. The amount is small on one message, but taking a large number in the course of a year, it very materially lessens the already small enough remuneration allowed. Anyone can see that the only gainer by this change is G. N. W., and the agents can sympathize with the public, and *vice versa*. Certain men, however, have recklessly dared to band themselves together, and formed the "Canada Mutual Telegraph Company" in opposition to this mighty monopoly. I can see no reason why they should not succeed in securing the services of good operators, who have the confidence of the public, and who are much dissatisfied with the manipulations of the G. N. W., and would willingly enroll their names with the "Canada Mutual;" thereby, if not benefiting themselves financially they would, at least, show the public that they do not encourage or uphold the G. N. W. in its endeavors to take advantage of the public.

H.

### Montreal Notes.

To the Editor of The Operator:

SIR: There has been considerable change in the Montreal office since the Great Northwestern has had the operating of the Montreal and Dominion companies. All the Dominion operators have been transferred to the Montreal office, with the exception of Messrs. Dempsey, O'Leary and Noble, who left for New York soon after the amalgamation. There are 15 ladies and 32 men on the day staff and five night owls. The day force is still presided over by Mr. J. R. McPhee as manager, J. S. Mackenzie as assistant manager and A. T. Nurse, "wire chief." The quad. lately put up is worked with Toronto and operated by Messrs. William Gibson and Louis Meloche on one side and W. H. S. Brady and Johnnie Wilson on the other. The market wire is worked by Mr. R. C. Pennie; Detroit wire by Mr. J. Clandining; Buffalo press wire by "Tom" Rogers, and Boston by J. R. Duggan. We have four sets of duplex—Quebec, operated by Sam Trenaman and George Washington Jolly; St. John, N. B., by E. McConnell (Saturday night chief) and Alex. Lanskill; Ottawa, by George Turner and Fred Jennings; New York, G. T. Boulet (late Dominion day chief) and W. J. Camp (his late assistant). The night staff is still under the management of Mr. Jas. Kent, with Dalglish as "Buffalo man" and Tom Robinson, the night press sender. The boys make considerable fun of the quad. The Mutual Union is expected to turn out good things in the spring for those that have still a little ambition left. The cable has been laid across the river, and they expect to have N. Y. "straight" by the first of January. The receiving room has been greatly changed. The wickets have been taken down and an open counter put up in their place, which adds greatly to the appearance of the office. The audit department has been transferred to Toronto, which is the head office now. The business has been pretty heavy since the amalgamation—1500 to 1600 have been the average between Toronto and Montreal during the last two months; but since the close of navigation it has been getting a little slack. The boys now look forward to the opening of parliament for heavy work, as all the report is expected to be done on these wires. Montreal boasts of a snow-shoe club, formed by the employees of the G. N. W. T. Co., which will be a great source of amusement to the "boys," and is called the "Electric S. S. Club."

CANADA.

### Baltimore Notes.

To the Editor of The Operator:

SIR: At a meeting of Brotherhood of Telegraphers, held Nov. 21, the name of the association was changed to the "Telegraphers' Beneficial Association." As the objects are purely beneficial, the change is very appropriate. Baltimore operators propose to establish a fund from which sick and distressed members will be assisted. The association numbers 30 members. Prosperity has dawned upon the old-timers in the W. U.; their salaries have been advanced from \$5 to \$10 per month. Of course, there will always be "soreheads." There is no question, however,

but that Manager De Bree has done all in his power to ameliorate the condition of operators, and if there are any wrongs, it is certainly his disposition that they should be righted. Both from Mr. De Bree and Chief Bloxham nothing but justice can be expected, so far as it lies in their power to secure it. E. H. Cole, better known as the bachelor operator, after an absence of several months in Virginia, has landed at "G. H." May he tarry long. S. H. Chambers, of the B. & O. R. R., at Locust Pt., has resigned, and gone to New Orleans. T. P. Stephens succeeds him as night man. Among the new faces at Union Station we notice Messrs. North and Heathcote. The force now consists of Messrs. Taylor, Weirs, Galloway, North, Heathcote and Brady, all fine operators. Ward and Remy are at Calvert Station days; Joe Kelly is night owl. The Mutual District Telegraph Co., of Baltimore, is the latest solicitor of patronage, having opened several offices recently. The company will do business over the wires of the Mutual Union Co., which are almost completed, and will open for general business West in a few weeks. A description of the M. U. office will appear in a future issue of THE OPERATOR. G. F. West is the able and efficient General Manager of the Mutual District, and will, no doubt, prove himself—as he has on previous occasions when connected with the American District Co.—a great worker of the new company.

BALTIMORE, Nov. 22, 1881.

EXCELSIOR.

### Indianapolis Notes.

To the Editor of The Operator:

SIR: Business continues heavy, though somewhat abated since August and September, and the night boys are still on the rampage for extra. There is a lively scuffle every night after "30" among them to see who sleeps in the manager's chair, so as to report early the next day.

Several changes have taken place since my last. Mr. Lew Custer has gone back to St. Louis and is now working the Indianapolis quad nights, with "Fatty" Lee at this end. Mr. Ed. Delany has gone to Louisville. Messrs. Mat. Leonard and Con. Sullivan have gone to Pittsburgh. Mr. Tim. Sullivan started westward several days ago and has turned up in Kansas City. Messrs. Blanchfield, Shorten, Dewese and Brown have gone back to former vocations—railroading. Mr. James Dietrick, one of our best men, has accepted a position on the Bee line in this city, and Mr. J. MacClure has resigned to fill a short vacancy in the Union depot office. Pat. Folley has also resigned and gone to Terre Haute.

Arrivals: Mr. A. H. Van Landingham, from Chicago; Harry Nichols, Cincinnati; Wat Crow, Greencastle; W. S. Bremer, Chicago; and Mr. Butterfield, also from Chicago. Mr. Carpenter, from Chicago, is here working extra for a few days. Miss Hollister, from the J. M. & I., is a very acceptable addition to our force of ladies. She is working regular extra. Mr. McIntyre has returned from an extensive visit in the East.

It is understood that the Mutual Union will reach Indianapolis about the 1st of January. It is not known who is to take the reins here. Competition at this point, to be successful, must have at its head a thorough business man. Our office is in every respect first-class, and business men of the city seem to appreciate the prompt and efficient style we have of doing business. Nevertheless, there is business enough originating at this point to support two or even more companies, and the Mutual Union will be heartily welcomed by our men. It is also understood that the *Journal* is to have an exclusive wire to Washington. This is indirect information, though from a good source.

WHIF.

### Omaha Notes.

To the Editor of The Operator:

SIR:—Business in Omaha office has fallen off but very little during the past month or so, and there are but few changes to note in the operating room. Mr. Frank Williams has just arrived from Chicago, and will this time make it a permanent stay. Mr. Williams is one of the finest operators in the West, and the management does well to secure his valuable services. Mr. Huey left us, prior to Mr. Williams' arrival, for his old home (Ogden, Utah).

Messrs. Stone, Foote and Langdon have left us and are now working in Kansas City.

A. H. Mayne is spending his vacation of six weeks with friends and relations in Ohio. Rodney Tyler, formerly of 'Frisco, was also recorded as taking a short vacation and surprised his many friends by bringing home a "blushing bride."

"The Brotherhood" are quite completely organized here, and the utmost harmony and good feeling prevails among its members. New members are constantly being added to its roll, and the outlook is indeed an encouraging one. Miss Brady, of the Western Union office has been seriously ill, but is now convalescent. The Western Union operators were very attentive and kind to her while ill. The boys have all agreed to give one of their extra nights in the week to Miss Brady, and thereby allow her to draw her salary. As a general thing the Omaha force have contributed liberally and generously to every worthy object presented to them.

Mr. M. C. Bristol, Assistant W. U. Superintendent of Construction, is building an additional wire between Omaha and Cheyenne, which will probably be used duplex between Omaha and Denver, as present facilities for the latter-named place are not sufficient for the rapidly-increasing business.

Himebaugh & Merriam's grain elevator office has now a direct Chicago wire. Charley Woodman is the manipulator.

O. M.

### The Boyce Fund Completed.

To the Editor of The Operator:

SIR: I have this Thanksgiving Day received from Mr. A. R. Brewer, Secretary of the Telegraphers' Mutual Benefit Association, his check for \$20.50, the remainder of the voluntary subscriptions of the friends of my late husband. I am very anxious to express to THE OPERATOR, and through it, my sincere thanks to the telegraphic fraternity, for their kindness to me and my orphan children.

AMANDA M. BOYCE.

MOUNT HOLLY, N. J., Nov. 24, 1881.

## TELEPHONE DEPARTMENT.

The Magnet Telephone Co., of New York, was formed at 234 Broadway, Nov. 17.

The Western Telephone Dispatch Company's line, of No. 14 steel, twenty-one miles in length (said to be the longest steel wire line in this country), twenty-one miles from Atchison, Kan., to St. Joseph, Mo., is reported to be working splendidly.

Nearly every telephone man will want to make presents at Christmas. "Wordsworth," "Christmas Evergreens," "Tales and History" or some of the other books advertised in this issue, will be found particularly appropriate for the purpose.

Experiments lately performed with telephones during thunder-storms showed that on the occasion of every storm, near or remote, the flashes of lightning were accompanied with a very characteristic sound in the telephones at the same instant that the flashes of lightning were seen. The wire was evidently affected by induction.

The switch-boards described as in use at Providence, R. I., by Mr. J. W. Duxbury, were made by Messrs. Post & Company, Cincinnati, Ohio, under their patents and the patents of Mr. A. G. Snell, of New Haven. Messrs. Post & Company are ready to make estimates or furnish any number or sizes of such boards as may be required for any sized exchanges.

Referring to the progress of the telephone in Australia, the *Sydney Mining Herald* reports some experiments which have been made between Melbourne and Albury, a distance of 200 miles, and between Sydney and Parramatta "with the most satisfactory result, the conversation carried on between these places being as distinct as that of two persons in the same room."

The practical advancement in telephoning, as in early telegraphing, presents a wide field for thought and improvement. We are standing on the beach of present attainments, while the sea of possibilities lies stretched in one vast, unbounded expanse before us. The thoughtful, inventive mind peers into and penetrates the mist which envelops this great sea of human possibilities, bridles the lightning's flash and



makes it do his bidding, sending pulsations night and day the world around.

Messrs. Balch & Root, American Bell Telephone licensees for Carroll and Whiteside counties, Illinois, have invented a new appliance for underground work, so as to use naked wire, dispensing with cables or insulated wires. The system is said to work well, with small induction and perfect insulation. The material is a secret, but is cheap and practical. With it 100 wires can be grouped in a radius of two feet. As soon as their patents are perfected the inventors propose to introduce it for more general inspection.

M. Landerer, at Tortosa, finds currents produced in his telephone circuit by atmospheric electricity in three different ways. First, the condensation of aqueous vapor results in a sound recalling the cry of tin. A sensitive galvanometer in the circuit is not, or hardly, affected. These sounds are strongest at night. Next, there are the sounds which occur during lightning (and the currents producing which affect a galvanometer considerably). Thirdly, the wind generates currents which do not act on the telephone, but act on the galvanometer strongly.

Testimony is being taken at Harrisburg, Penna., to show that Daniel Drawbaugh, who lives near that city, invented the speaking telephone before Professor Bell, and that he was prevented by poverty from perfecting the instrument. Drawbaugh's invention is owned by the People's Telephone Company, and from the evidence taken the company believe it will enable them to establish priority of invention for the Drawbaugh telephone. Thus far about 112 witnesses have been examined, and probably a dozen more will testify before the case is tried in the Circuit Court of New York, where proceedings have been begun against the Bell Telephone Company by the People's Company.

Telephone interests are well represented in Portland, Me., and the genial manager, J. H. Farnham, is alive to the situation. It does one good to enter the busy office, containing about 12 tables and accommodating nearly 600 subscribers, operated by some six or eight bright young ladies and gentlemen who, though attending to upwards of 5,000 calls daily, move about the office as noiselessly as if it were a model school room. Mr. W. H. Lincoln is the first assistant, and the manner in which he officiates over the staff reflects great credit upon him. Everything is neatness and order, and the Williams system of cord and plug switch shows to the very best advantage here. Thirty seconds complete the average connection, which is remarkably quick when we consider that by their method each connection passes through five operations. There are about 15 suburban circuits, the longest reaching Lewiston, about 40 miles distant. Manager Farnham's ingenuity is well displayed by the numberless little inventions designed for the convenience of the office, and a visit to this exchange is well worth the trip to parties interested.

At New Haven, Conn., on the 15th of last month, suit was commenced by the United States Telephone Company of New York against the Connecticut Telephone Company in New Haven and Hartford for infringement of the patents recently issued to James W. McDonough, of Chicago, for the speaking telephone in use by the Connecticut Telephone Company as licensees of the so-called Bell telephones and battery transmitters. The application for letters patent was filed by Mr. McDonough in the patent office at Washington, April 10, 1876, under the title of "The Telelog." This was before A. G. Bell had produced an articulating telephone. It is claimed that, by the employment of incompetent attorneys, Mr. McDonough's case was greatly delayed in its prosecution before the patent office. The invention was purchased by Mr. Logan C. Murray, of New York City, about a year ago, and able attorneys assigned to press his claims before the examiner of electric patents, resulting in the issue of three patents by the Commissioner of Patents, after the most careful examination, the patents bearing dates respectively in August, September and October, 1881, and for a term of 17 years from those dates, the claims allowed fully covering the receiving telephones and battery transmitters now in general use. Nov. 1, inst., those patents were purchased from Logan C. Murray by the United States Tele-

phone Company, which brings the suit. James W. McDonough, the inventor of the telephone, is a great-grandson of Commodore McDonough.

Mr. Richard Whiteing, in describing the "Opera by Telephone," at Paris, writes as follows concerning that highly novel and interesting entertainment: "While we all stood in this attitude of expectation, one of the attendants suddenly called out 'Now.' The disks were placed to our ears and we heard through them, from I know not what infinite distance and mysterious depth, the overture to Gounod's 'Faust.' It was heard perfectly, but with some diminution of volume and intensity. It was in some respects better than at the opera, in being without the strong resonant echo. \* \* \*

And it was an immense gain to this unity of effect to hear only and to see nothing—not the frantic leader of the orchestra, for instance, the scraping fiddlers and the puffing trumpeters, and so on, nor in fact anything of the visible manufacture of an influence which we like to regard as almost divine. There was only one defect, and that a pretty serious one. In spite of the superiority in the blended sound, there was now and then an undue prominence in certain elements of it. You heard the bass, for instance, on the rare occasions, happily, on which it was used with painful distinctness. This, I learn, is because instruments of slow vibration have more effect through the telephone than instruments of quick vibration—an inconvenience that may be remedied. Then suddenly the overture ceased, and a sound like stone striking stone—say the emptying of a cart-load of macadam on the pavement—showed that the public was giving its applause. Then there was silence for a moment or two, during which we lifted our beatified faces from the wall and smiled on one another with foolish joy. But the smile soon died away from the lips of my companions as the attendants came in and cleared them off the premises to make way for the next batch. Resistance would have been useless. One could hear the murmur, fast deepening into a roar, of the starving beings without waiting for their musical food. I alone kept the disk to my ear all the while and lost nothing. There was not much to lose. It was the beginning of Faust's soliloquy, which on the stage is delivered in the low tone suited to introspective meditation, and which came to us in a still lower one. But as the dreamingscholar advanced from melancholy to desperation he was heard perfectly well. Then there was silence for a moment, and we knew that he was pouring the magic drink into the cup, and suddenly there reached us a chorus of soft yet exquisitely clear, flute-like voices. It was the choir of maidens giving the unhappy doctor what sporting gentlemen call 'the office' as to a remedy for his complaint: 'All nature awakes to love.' This was heard as well as it deserved to be for its intrinsic value as a secret of the healing art, the final *s'éveille à l'amour* ringing out sharp and clear. \* \* \* When I again had my chance *Faust* and *Mephistopheles* were concluding their infernal bargain, and the devil, perhaps as having so much the better of it, was heard the more distinctly of the two. The words seemed to have a truly diabolical signification, reaching one's ears as they did from nowhere, sounds without a sight of their source. This I should say affected the entire performance as heard by telephone, music which is essentially the delight of the spirit, and gains by being kept as clear as possible from every material association. How can one be too grateful, for instance, to a happy pleasantry at two francs a night that gives us its voice of Arcadia without its look of the Batignolles."

### DASHES HERE AND THERE.

London contains upward of 300 telegraph offices, open from 8 in the morning until 8 at night.

Rolled gold solid ring only 75 cents. Greatest offer ever made by a responsible firm. Read advertisement. G. W. Pettibone & Co.

If you want to become a telegraph operator, send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.—*Adv.*

A correspondent wants to know whether the new blanks now used by the Western Union have been highly colored in honor of Jay Gould (Gold)."

THE OPERATOR, one year, is one of the most appropriate presents that a telegrapher could make to a young lady friend—whether she be in or out of the business.

On the 18th ult. the quadruplex was successfully worked on the lines of the Montreal Telegraph Company. It worked well over a distance of 335 miles on a No. 9 wire.

The name of Col. D. C. Dodge is not a hard one for any fair operator to take, but the other day it passed through Kansas City office and was received in Denver as "Cold Clodge."

The advertisement of the Saxon Importing Company in the present issue deserves the attention of telegraphers desiring a good gun at a low price. The company is perfectly reliable.

It is said that since telegraph wires have been carried throughout Norway wolves have disappeared. It is stated that a wolf will not dare to pass under a rope or line stretched between poles.

Superintendents, managers and others who may wish to make presents to their subordinates at Christmas—and it is a pleasing custom—are invited to read our Christmas announcements in this issue.

Messrs. C. E. Jones & Bro., of Cincinnati, are anxious to get a copy of J. A. Lannert's Outline of Practical Telegraphy, price 25 cents, which is out of print. They will pay \$1 to any one who will send them a copy.

The telegraph cable ship *Hooper*, which is said to be the largest afloat, has been sold and renamed *Silvertown*. She will leave England in March to assist in laying the 3,000 miles of cable on the west coast of South America.

The second reception and ball of the Omaha telegraphers took place on Monday last, Nov. 28. As all the prominent telegraph men in Omaha had interested themselves in the affair, the evening was doubtless very enjoyably spent.

NOT A FRAUD.—Any person that uses Farnham's Armaline patiently will testify to its merits. It is a reliable cure for writer's cramp or pen paralysis. Send for circular to Brown, Pettibone & Kelly, stationers, 194 and 196 Dearborn street, Chicago.—*Adv.*

The volume of Wordsworth's poems, advertised elsewhere, is the most beautiful and appropriate present, at the price, that a telegrapher could make to a friend. Copies will be mailed—so securely done up that they cannot be damaged in transit—on any date that may be desired.

Two linemen of the Western Union Telegraph Company, named David Cronan and Wm. Dogan, were instantly killed near Vincennes, Ind., on the 21st ult. They were running a hand-car on the track of the Evansville & Terre Haute road, and were struck by the south-bound passenger train.

Messrs. C. E. Jones & Bro., of Cincinnati, have just issued a 110 page "complete illustrated catalogue and price list," in which will be found cuts, descriptions and prices of everything connected with telegraph, telephone and electrical instruments that any one will be likely to call for. Those in need of instruments or supplies will do well to send for a copy.

George W. Wentworth, a well-known resident of Salmon Falls, N. H., was shot, on the 24th ult., in the neck and thigh by E. L. Nowell, a telegraph operator at the Boston & Maine depot in that town. Wentworth's condition is stated to be critical. Immediately after the shooting Nowell gave himself up. The alleged cause of the affray is stated to be family feuds of long standing.

An advertisement of jewelry suitable for holiday presents by the well-known firm of G. W. Pettibone & Company will be found in another column.

A dispatch from St. Paul, Minn., says that President Villard, of the Northern Pacific Railroad, has made a contract with Edison for the construction of fifty miles of railroad in that State in 1882, upon which to test the efficiency of the Edison electrical engine as a motive power for railroads. Villard is to pay for the road if the experiment is satisfactory. If the test fails Edison (and the capitalists backing him), will have to pay the greater part of the costs.

The big bridge over the East River, between this city and Brooklyn, has already become a great favorite with the telegraph and telephone



companies, who prefer using it for their wires than to lay cables, which are expensive to construct and difficult to repair. The bridge trustees charge \$30 per year for every wire. The Metropolitan Telephone Company alone pays about \$14,500 per annum for this privilege, and it is said that other companies pay about \$6,000 more.

It is said that a marked improvement has been noticed in the acoustic properties of the Grand Opera House of Paris since the introduction of the electric light. A layer of heated gases acts as a screen for sound, hence the volumes of hot fumes arising from the old gas foot-lights obstructed and marred, to some extent, the voices of the singers. With the electric light, inclosed in air-tight bulbs, no fumes can be emitted, and very little heat is given off. Hence its benefits to the ear as well as to the eye.

The Altoona, Penna., *Tribune*, of November 16, says: "David McCargo, General Superintendent of the Allegheny Valley Railroad, is reported to be so seriously ill at his home at Oakmont that his death is but the question of a few hours. It appears that on his return from Europe, where he had gone with the Carnegie party, he was taken sick with rheumatism, which has caused clotting of the blood and arrested circulation. Mr. McCargo commenced life as a messenger boy for the old United States Telegraph Company. His tact and executive ability secured his rapid promotion, and a few years later he was superintendent of the Atlantic & Pacific Company, from which he went to the Allegheny Valley Railroad, and within a few years enjoyed the reputation of being one of the best superintendents in the country. Mr. McCargo has a wife and two children, a son and a daughter, and is about 45 years of age."

The *Engineer* reports that the system of underground telegraphy devised by Dr. Stephan, the Postmaster-General of Germany, is now complete. On March 14, 1876, the first line of cable from Berlin to Halle was commenced, and on June 26, 1881, the work was completed by the laying of the cable from Cologne to Aix-la-Chapelle. In 58 months 18 lines have been laid, comprising 3,394 miles of cable, costing 30,200,000 marks. The 18 lines connect 221 towns. The weight of the cables is 12,825 tons. German main lines are no longer in danger of being effected by wind or snow or ice. In France a similar system is adopted between Paris and Marseilles. The trenches for receiving the iron pipes in which the cables are laid are nearly four feet deep. These cables contain three conducting cables, with seven conductors in each, giving thus 21 conductors altogether. Facilities for examining the cables and repairing them are provided at distances of 500 metres.

It has sometimes been thought, says *La Lumière Electrique*, that a copper cable of enormous thickness would be required to transmit the hydraulic power of Niagara Falls to New York. Prof. Ayrton has shown that the whole power could be transmitted by a slender copper wire, provided that the wire could be thoroughly insulated. He has also shown that the only hindrance to receiving the whole power is the friction of the machines. It is, therefore, believed that immense machines, with continuous currents, with detached exciters or magneto-electric machines, driven very rapidly by steam-power, will hold a very important place in the future transmission of energy. With such machines it would be possible to warm and light workshops and give them the power necessary to move all their machinery by means of an ordinary telegraph wire, thoroughly insulated, and conveying energy from great distances. Prof. Perry also thinks it will some time become possible to see what is going on in remote places by means of electricity.

Telegraph operators, especially those who "change off" between day and night work, suffer from weak eyes, probably, more than men in any other profession. Those also who, as most operators do, work around an office, first at one table and then at another, suffer unconsciously a tremendous strain on the eyesight, principally from continually changing the range at each table between the eye and the paper, which calls for an unceasing effort to keep the eye in due accommodation for the varying object. Night men who work by the intense glare of an artificial light make steadily increasing

demands upon the organ of vision, no symptom of weakness in which should be neglected for a single day. These trying cases, in all their variations, are provided against by scientific opticians, who can give directions for working in strong artificial lights, twilight or sunlight, with the relative merits of glasses, cobalt green, blue and white, and shades of all descriptions. Those who are desirous of investigating the subject, with a view of preserving or improving their eyesight, we refer to our advertisement of Messrs. R. & J. Beck, 1016 Chestnut street, Philadelphia. Their circular deals with the subject fully, and may be the means of averting much trouble in years to come.

Mr. Alden, the funny man of the New York *Times*, has the following to say of the so-called electric brushes so freely advertised: To all appearance it is like an ordinary brush, but in its bristles is stored up an inexhaustible supply of electricity. How this electricity is put into the bristles is not known. Perhaps they are soaked for twenty-four hours in a pailful of electricity, or perhaps electricity is forced into them by heavy pressure. At any rate, the electricity is in them, and it is practically inexhaustible. As everybody knows, electricity is a specific for headache, no matter from what cause the headache may arise. Doctors have hitherto administered electricity by the spoonful, or in the shape of pills, but its unpleasant taste has rendered it unpopular with delicate patients. The electric hair-brush supersedes electrical pills and draughts. If you have a headache all you have to do is to induce some one to brush your hair with an electric brush. You will neither taste nor smell the electricity, but it will soak through the scalp and skull, and on reaching the brain will instantly cause the headache to cease. This is surely better than swallowing nauseous doses of liquid or solid electricity, which delicate stomachs often are unable to retain. There is abundant testimony to prove that the electric hair brush is as beneficial and infallible in its effects as are the liver, stomach, lung, kidney, spine, shin, and back-teeth pads that are in such universal use, and the sneers of the doctors who call themselves "regular physicians" cannot injure it in public estimation.

The following is a *verbatim* copy of an application recently received by a Western superintendent:

"Mr. woods I would like to Have A night office on your line I Have Ha considerable practice One the lines Have Been at the Buisnes for 5 months and few day over I have bin on a farm all my life untill I commenced This buisniss And I pritind to Be sober and industrious But Never Have Been employed By R R co So of course I Have no papers as regard my good qualites all i ask for is to try me I think That I can make good satisfaction in small Night office I can receive 20 per minute word when it is well sent But i probably be some wat Bothered in the start But can get along and make good satisfaction i thing 29 yers old Ohio my native State Please answer soon inclosed find stamp."

Another Eastern applicant, who thinks he "could soon learn to climb poles and fix breaks," but acknowledges that he is "not a good sound operator; in fact, was always used to the register," adds—we give his postscript *verbatim*:

"P. s.—I can climb a tree now without them stickers that the men have on their heles and I have no doubt I would be a first-class operator in a cupil of months in a quiet plase where there is no noise what selery can you offer me to start in on remember sir I can take 8 words a min. if sent slow and is that fair speed on a telegraph wire by sound if so I am ready and hope you will file my application and give me the first vacancy."

## NEW YORK CITY ITEMS.

### Echoes From 195.

Mr. W. F. Lewis, late of 195 Broadway, N. Y., is now in the Richmond, Va., W. U. Office.

Mr. Wm. Maver, Jr., has been elected Secretary of the Telegraphers' Aid Society, *vice* Mr. J. W. Moreland, resigned.

Everybody is complaining about the bad ventilation of the crowded operating room, and many of the employes only manage to worry through the allotted time of service by a desperate struggle.

Assistant General Circuit Manager Fenn has returned from Pittsburgh, after having exterminated the "bugs" in that office. "Joe" is a favorite with the operators at 195, and is as courteous as he is competent, and that is saying a great deal.

The *Paris* (Ill.) *Gazette* says: It will be remembered that Mr. George Cumming was telegrapher for the I. & St. L. Ry. here in 1869-70, and was highly esteemed by all who knew him. His many friends here congratulate him on his success as an inventor.

The Hon. Jeremiah Borst, Colonel Weller, Elder Bob Morris and other magnates of the operating force must hereafter discontinue the pernicious habit of standing in front of the Western Union Building and familiarly bowing to Governors Morgan and Cornell, Jay Gould, and other Western Union dignitaries.

"I think the night men on the Chicago wire take me for a new man," remarked Denis Brown to Chief Kennedy the other evening. "How is that," inquired the Chief. "Well, one of them just slipped a message of 150 words before me and told me to send it to Chicago." "What did you do?" "I just slipped it back," said Denis, and told him he couldn't come that on me, for I had been playing the same game myself for the past seven years."

### Other City Items.

Mr. Van Hovenbergh has sold his stock printing instrument to the Gold and Stock Telegraph Company for \$10,000.

At the next meeting of the New York Electrical Society, which occurs at No. 64 Madison avenue on Wednesday evening, Dec. 7, Mr. H. W. Pope will read a paper, on "Permanent Wire Ways: Aerial and Subterranean."

Mayor Grace has vetoed the aldermen's resolution granting permission to the Metropolitan Telephone & Telegraph Company to lay wires under the streets of this city. He thinks one cent for each lineal foot of street occupied is not enough for the privilege, and that the Metropolitan Company should be compelled to pay a fair price for the franchise.

At a meeting of representatives of the Brush, United States, American, Fuller, Weston and Jablochkoff electric companies in this city last week, in the office of the Gramme Electrical Company, it was decided to enforce to the fullest extent their patent rights against infringing companies. A committee was appointed to act with the Board of Fire Underwriters in making an exhaustive investigation of the alleged danger of fire from the use of the electric light.

Since the general meeting of the Telegraphers' Union, held on Sunday, Nov. 13, applications for membership have been pouring in. Almost every first-class operator in the city is now a member of the Union. The modification of the application for membership has so enlarged its latitude that operators residing in small towns where their numbers are insufficient to form a separate branch may become members of the New York Union. Those having that object in view will receive a copy of the constitution, etc., upon application to any of the members. The officers hope that all operators will identify themselves with the organization as soon as possible.

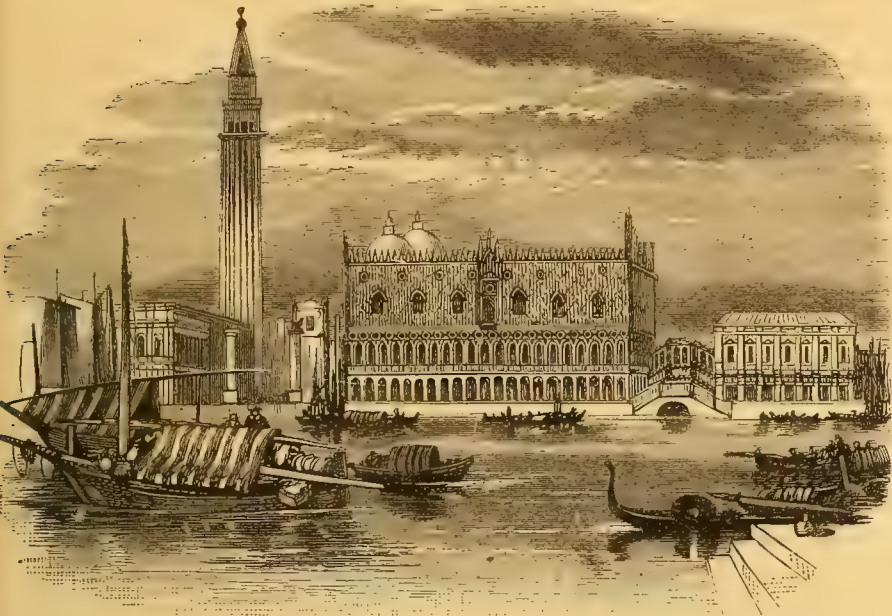
At the meeting of the New York Electrical Society, on Wednesday evening Nov. 16, Mr. Charles S. Small, Assistant Superintendent of the Gold and Stock Telegraph Company, read a paper on "The Novelties of the Paris Electrical Congress." After praising Edison for his important, numerous and varied exhibitions, Maxim for his powerful arc lights and George Cumming for a new telegraphic key with peripheral contact, Mr. Small proceeded to describe the novelties. A microtasimeter was explained, which is so delicate that it will measure the calorific rays emitted by the fixed stars. An electromotograph, somewhat similar to the telephone, was said to possess greater intensity than the telephone. Electric motors for balloons were described which possess the advantage of having the balloon carry its own motive power. Uniform time-keeping by the electric current, photography by the aid of the electric light, and an automatic weather recording apparatus were explained, after which several members of the society discussed the merits of the paper presented.



W. J. JOHNSTON'S

## CHRISTMAS ANNOUNCEMENTS.

No. 9 Murray Street, New York City.



From poem "On the Extinction of the Venetian Republic."

POEMS OF WILLIAM WORDSWORTH: Edited, with an Introduction, by Richard Henry Stoddard. 320 octavo pages. Elaborately illustrated and superbly bound. Gilt edges. Price, \$3.

Herewith is announced a new edition of the poems of William Wordsworth. In this country, as in England, the poet of Nature is steadily gaining in popularity. As a rule, the age of newness and curiosity being passed, every fresh reader becomes a friend and admirer of such poetry as his, which "wears well." Those who have once taken a drink from the pure, cold fountain of Wordsworth's inspiration will often return thereto, to cool the heat of life's fever. The writer remembers his first introduction to the greatest poet of the century. He was a school-boy then, under a preceptor of a just literary taste, who permitted him to know what were the books at the time engaging his attention. At the epoch referred to—for it proved to be an epoch in the individual history of him who pens these words—a volume of Wordsworth's Sonnets was among the literary treasures on the master's desk, and the pupil read the divine apostrophe to Milton:

"We are selfish men;  
Oh! raise us up, return to us again;  
And give us manners, virtue, freedom, power.  
Thy soul was like a star, and dwelt apart;  
Thou hadst a voice whose sound was like the sea:  
Pure as the naked heavens, majestic, free,  
So didst thou travel on life's common way,  
In cheerful godliness; and yet thy heart  
The lowliest duties on herself did lay."

These words placed one more disciple at the feet of a prophet who perceived and felt above all others the deep harmonies of Nature—their power to soothe and heal, to chasten and subdue the passions, to refine and to endow with an abiding happiness. From that time to now, every day spent without some companionship with Wordsworth has seemed to be an imperfect one.

No poet is more tenaciously admired than Wordsworth, and no poet has been the subject of more flippant criticism. The distinction between "is" and "has been" in the preceding sentence is one well considered. Wordsworth's poetry has survived the attacks of small wits, and is ranked among the best which gives an unmatched distinction to English literature. The critic can now write Shakespeare, Milton and Wordsworth as the greatest names in English verse, and his judgment is not the subject of a sneer. [Fifty years ago this estimate, which is extensively and in-

creasingly accepted, would have been received with surprise, if not with contempt. Wordsworth's poetry has proved like gold tried in the furnace.

Admitted that Wordsworth, like the most of people, had a crotchet. His earlier poems were distinguished by an affectation of simplicity as to subject and style, which his ingenious defense thereof failed to justify. But his genius survived an inconsiderable weakness of its immaturity. The English language has rarely reached such copiousness and majesty of diction as in many passages cullable from the works of the Lake poet. For example:

"Within the soul a faculty abides,  
That with interpositions, which would hide  
And darken, so can deal, that they become  
Contingencies of pomp, and serve to exalt  
Her native brightness. As the ample moon,  
In the deep stillness of a summer eve  
Rising behind a thick and lofty grove,  
Beams like an unconsuming fire of light  
In the green trees; and, kindling on all sides  
Their leafy umbrage, turns the dusky veil  
Into a substance glorious as her own,  
Yea, with her own incorporated, by power  
Capacious and serene—like power abides  
In man's celestial spirit; Virtue thus  
Sets forth and magnifies herself; thus feeds  
A calm, a beautiful and silent fire  
From the encumbrances of mortal life,  
From error, disappointment—nay, from guilt;  
And sometimes, so relenting Justice wills,  
From palpable oppressions of despair."

The enthusiasm of a steady admirer is perhaps excusable, even when it leads him to deprecate the omission from any edition of Wordsworth's works of the poems which so wonderfully exercised the pleasantries of certain critics upon their first appearance.



"Happier far  
Could they have lived as do the little birds  
That peck along the hedges, or the kite  
That makes his dwelling on the mountain rocks"

There must be more than their simplicity to account for the wonderful popularity of "We Are Seven," "Lucy Gray," "The Pet Lamb," and other early pieces printed and beautifully illustrated



in the edition suggesting these remarks. The truth is that their deep undercurrent of thought and feeling influences the popular judgment beyond the carplings of verbal critics with their musty precedents. While "Tintern Abbey" and the "Ode on Immortality" are, of course, infinitely out of the reach of petty criticism, the detractors of Wordsworth should remember that the early



"A garden plot the mountain air perfumes,  
'Mid the dark pines a little orchard blooms."

poems survive and are published with the unquestionably immortal efforts of his muse. Dear to the universal heart is the doctrine of the survival of the spirits of the dead in another condition of being, and of their sweet kinship with the dear ones left behind but destined to rejoin them in a better life:

" 'But they are dead: those two are dead,  
Their spirits are in heaven!  
'Twas throwing words away: for still  
The little maid would have her will,  
And said: 'Nay, we are seven.'"

Moreover, the choice spirits of all ages have been touched with the same sympathy expressed with simple beauty in "The Pet Lamb." Burns saw in the field mouse "a poor earthborn companion and fellow mortal." These remarks could be extended further. The claim is not made that Wordsworth never flags or fails, but all that he said has a feeling and a purpose, is grounded on a conviction or a sublime perception which the least dignified expression cannot injure or impair. Moreover, peculiarities which those who do not know and love the poet cannot tolerate, are an interest and a charm to those who companionate with him day by day.

Wordsworth freely confides with his readers. He lays bare his innermost thoughts, his deepest feelings. His poems are in this sense egotistical; but their author was not destitute of dramatic ability, as some critics say. The skeptic in the "Excursion," for example, leaves on the writer's mind an impression that

his personality is entirely distinct from that of Wordsworth at any period of his life. There is not, to his knowledge, any proof against the presumption that the skeptic is as real a creation as Shakspeare's Hamlet.

A word should be said in commendation of Wordsworth's style. He is eminently scholarly and precise in his employment of language. For this reason, if for no better one—but a better would soon follow—our young people should be encouraged to study his works among those of other masters of the language. In these busy times a correct use of English is most desirable. Comparatively few persons attain this capability, and the statement of one aid thereto may be of service.

This brief review, necessarily incomplete, will, perhaps, answer a useful service as introducing a superb volume which the publisher has produced in time for the holiday trade of the present year. It contains poems of William Wordsworth, edited with an introduction by Richard Henry Stoddard. This feature of the edition gives it a special interest to the numerous admirers of Mr. Stoddard, himself no inconsiderable poet, and whose remarks will be found of great value as a piece of criticism. They are discriminating, just and learned, and give an American character to the book which is pleasing and satisfactory to those who desire the development of national scholarship and literary taste, and give them encouragement.

The paper and letter press are of the best, and the binding most tastefully ornamental in quality. The work contains more than three hundred pages octavo, generously illustrated in a manner best shown by the accompanying pictures. Let it be remembered, however, that in the book itself the paper is of superior thickness



"We are seven."

and finish, and the printing done with greater care than is necessary or convenient in an announcement.

The publisher feels that in presenting this superb book to the



attention of the public—a book, by the way, always opportune as a gift, a valuable accession to the library and the home, and the pure instructor and solace of many hours to every appreciative possessor—he is making an experiment for which he can confidently



"This sea that bares her bosom to the moon."

predict success. The poet, the editor and the publisher has each done his part; and now, gentle reader, it only remains for you to do yours.

**CHRISTMAS EVERGREENS:** A selection of the best English and American poetry. Elegantly illustrated and bound. Cloth. Gilt edges. \$1.50.

This is an exceedingly neat and pretty volume for a holiday gift at a low price. It includes poetry by Longfellow, Bryant, Montgomery, Wordsworth, Tennyson, Sir Henry Wotton, Benjamin F. Taylor, George T. Lanigan, Goldsmith, Gray, Eliza Cook, and other prominent poets, compiled with a view to variety, and including, without prominence being given to them, subjects created under aspects of life peculiar to modern civilization.

Some of the greatest names in poetical literature give a standard and classical character to the work, not at all impaired by the attention which has been given, in quoting from their productions, to subjects having a live interest in this unique period of history. But the affections and the emotions are the same now as ever in the past, and in the great future to come. They are excited by means which may differ from those in times that are gone, and in compiling verse for popular reading this is wisely borne in mind. Still, in the collection herewith announced, are given many beautiful verses which awaken thoughts of other times and different modes of life, and quicken the sensibilities to a wide range of sympathy.

"Christmas Evergreens" is a beautiful volume. Its illustrations are numerous and after some of the best pictures produced by modern art in this and other countries. Poetry and pictorial art are happily associated in the work under description. Moreover, the printer and the binder have vied with each other in perfecting a model holiday book within the reach of all.

The publisher can find space for the mention of but a few opinions of the press as to the eligibility of "Christmas Evergreens" for a gift book, the parlor and the drawing-room table.

The New York *Evening Post* says it is "a very pretty compila-

tion;" the Boston *Transcript*, "the book is well illustrated and handsomely printed;" the New York *Tribune*, after a flattering description adds, it "furnishes an acceptable gift at a moderate price." The Washington *Republican*, Providence *Press*, *Publishers' Weekly*, and other prominent journals give a similar account of the work.

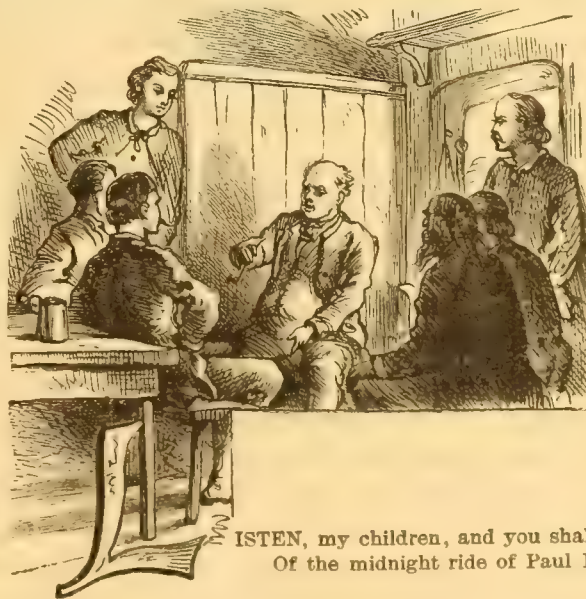
**TELEGRAPHIC TALES AND TELEGRAPHIC HISTORY.** A Popular Account of the Electric Telegraph; Its Uses, Extent and Outgrowths. By W. J. Johnston. 254 pages. Cloth. Tinted Paper. Price \$1.

The success of this book has been a marvel, the first large edition having been sold out in a few months. It was written for the public, who find in it very instructive matters presented without technicalities, and affording recreative reading which leaves valuable results. It is fascinating as a story, yet every possessor has in it a full and complete history of the development of the most wonderful achievement of modern progress—namely, the subjugation of the lightning and its service to the needs of man. A chapter on pre-electric telegraphs is followed by an account of the invention and of its introduction into this country. Then follow a talk about operators and messengers and a chapter on the use of the telegraph in war, in which due prominence is given to the American civil war. Cable telegraphs and the Atlantic cable—a valuable contribution to the history of invention—is succeeded by humorous stories and "bulls." Next the freaks of the lightning find places, succeeded pleasantly by an account of abuses wrought by the employment of lightning as a messenger. Weather reports, railway telegraphy, and new and curious applications of the electric fluid, with a whole chapter on Electricity and Life, and another copious one on Outgrowths of the Telegraph, complete an outline survey of the work, which includes within a moderate compass all that the general reader requires to know about the subject treated.

"Telegraphic Tales and Telegraphic History" is very prettily got up. The binding is suitably ornamented from designs by an artist eminent in the line of book embellishment. It sells rapidly wherever introduced. Both the trade and the public are delighted with it.

The press, American and foreign, have unanimously approved the method and matter of the work. The New York *Times* says: "This quite interesting volume gives the whole history of the telegraph in a brief and intelligent manner. The topic chosen by the author is a most interesting one, and by his thorough famili-

Sample illustration from *Christmas Evergreens*—Longfellow's "Paul Revere's Ride."



LISTEN, my children, and you shall hear  
Of the midnight ride of Paul Revere.

arity with the subject, theoretically and practically, he has succeeded in making not only a useful but a most amusing volume."

After an elaborate review, the London *Design and Work* closes with the regret expressed in the following terse sentence: "We regret that we cannot find space for more than a few extracts from this exceedingly interesting book."



"Very pretty, readable and useful," is the sententious summary of the *New York Express*.

The *New York Sun*, in a long critique, says: "The author has chosen an effective and attractive form of exposition, being careful to illustrate the salient features, characteristic incidents and important improvements of telegraphy by pertinent anecdotes. The result is that the book is decidedly entertaining, while, at the same time, it presents in a systematic and compact form a summary of such technical information as is useful to the general reader, and not unserviceable to the professional operator. It is seldom that a book containing so much substantial and not easily accessible material of a specific kind is commended to a wide audience by a careful and pleasing literary treatment."

Other prominent newspapers have given considerable space to quotations from this volume, which the publisher confidently recommends as a very salable holiday book, and one in steady demand throughout the year. Young people are invariably pleased with it.

**WIRED LOVE:** A Romance of Dots and Dashes. By Ella Cheever Thayer. 256 pp. Cloth. 75c.

The writer of this clever bright story had a happy inspiration when she hit upon its subject. Her work gives a pleasing and faithful insight into the every-day life of telegraph operators, male and female. In the development of the plot, their recreations, loves and jealousies, the humor which lightens their toils, their business aspirations, diverse peculiarities, and their domestic life, are delightfully described and all consistently within the artistic necessities of the successful novel. People who take up this work are apt to read it from beginning to end without loss of time. "Wired Love" is, in brief, an eminently successful story, in which American operators are deeply interested because of its special reference to their occupation; but less so than the general public, who find in it the first and the only novel having as its principal characters the useful and intelligent class of persons who both make the lightning talk and interpret to those who need its disclosures what it has to say for them. The publisher has given great attention to the mechanical presentation of this book, which is unquestionably both cheap, attractive and of lasting interest.

"Wired Love," remarks the *Chicago Inter-Ocean*, "is a good book to make you forget business and cares, and leaves pleasant memories behind it." The *Boston Transcript* advises every one who wishes to read a bright, original book, and desires a good laugh, to buy "Wired Love." The *New York Mail* commends it for its "cleverness and humor." The *Boston Herald* adds that the "book is written in an easy, off-hand style, is pervaded with great humor, and its sentimental portions contain some suggestions of wisdom that are expressed with great force, beauty and originality."

**GENERAL U. S. GRANT:** His Early Life and Military Career, with a brief account of his Presidential Administration and Tour Around the World. By J. K. Larke, of the *New York Commercial Advertiser*. 512 pages. Cloth. Price \$1.00.

Biographies are always the most profitable reading, since they not only yield us the pleasure experienced in perusing a good novel, but also teach us the practical lessons in life, and inspire in us the commendable spirit of emulation. A great many men fritter away their lives in a manner useless to themselves and to the community, simply because they have neglected the stimulating influence of the example of successful men who have gone before them. It has been a favorite theory with the writer for many years that when a young man makes up his mind to try to be successful in the world, he should fix upon some great historical character, make him his patron saint, and ever strive to imitate him in all that is good. All through the long range of biographical literature are found great characters which have struggled up from the carpenter's bench, the weaver's loom, and even from the laborer's hod, until the "fierce light" illumines their wonderful characters to posterity.

The interesting historical work announced at the head of these remarks leads us in the most entertaining manner through the great surging current of a human life—the life of Grant—sweeping on from comparative poverty to fame and fortune, the stream swelling with mighty deeds as it flows resistlessly onward—on through every one of the fifty-nine years which weigh so lightly on the General now. We are with him in the humble home of his childhood—the fair-haired boy, unknown and unnoticed—and again we see him, after the lapse of a few years, standing on the shell-ploughed field, the Chieftain-in-chief of a triumphant and overwhelming host, a million strong. We see him in civil life toiling at his daily labor for a struggling family, and again we hear the clanking of sabres trailing from the sides of strong men, proud in their might, surrounded by flaunting flags, and charmed by martial music—and here, again, we find him the noblest and grandest of them all. We accompany him on his triumphant, circum-mundane tour, and hear the tanner's boy imparting sound advice on matters of state to Tycoon and Wong-hi, with Sultans, Grand Lamas, Kings and Emperors hanging upon his words—a living monument and certificate to the world of the freedom of America, which sets no limit to the poor man's aspirations.

Whatever may be thought of General Grant's political action, his private life and his steady rise to highest eminence are distinctively American achievements, of which all should be proud.

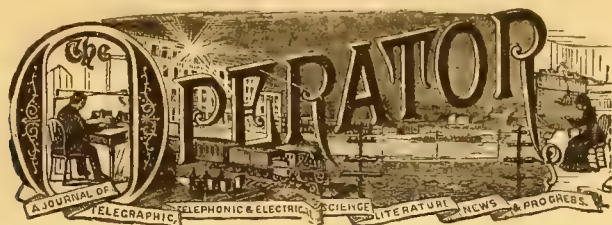
There are more conflicts yet to come, more victories to gain, more youths to win glory. The battle of life is never won without ambition, and the best way to stimulate a healthy ambition is to read well-written and comprehensive biographies of eminent men. A book of 512 pages, retailing for one dollar, leaves no excuse for not studying one such work.

## TO BOOK BUYERS.

Above are announced certain books, all of which contain good and interesting reading, excellent alike both for the private library and the family. The biography of an eminent soldier and statesman; a charming work of fiction; a delightful book of instruction about telegraphic matters; poetry selected from many authors, and a handsome volume of the best productions of Wordsworth, describe a list of publications possessing very remarkable interest throughout the year, but especially in this holiday season, when parents and brothers and sisters and husbands and wives and relatives and friends are thinking what to buy as suitable for a present. The list herewith given contains a selection of books, every one of which is the right thing for a gift book, and affording variety and sufficient difference in subjects to those who are on the lookout for these advantages readily presented. All ages, all purses, all tastes are provided for, and there is excellent value for money in the case of every book offered.

These works are announced as holiday books, not only because of the propriety of their subjects, but of their mechanical presentableness. They are well made and tastefully got up books, with strong and enduring qualities withal. The Wordsworth is one of the most beautiful books that has been put on the market for a long time; handsomely bound and sumptuously illustrated, and edited by Richard Henry Stoddard. "Christmas Evergreens" has been strongly praised by the press. "Telegraphic Tales and Telegraphic History" is selling capitally, and is universally commended. The "Life of Grant" is an interesting and impartial account of the great soldier and statesman from his earliest life to after the time of the highest development of the honor given him and the nation. A sweet, unique and artistic story, "Wired Love," completes a list happily containing song and instruction, fiction and fact, and offering beautiful and substantially made books to the public, eligible for and during the holiday season, at a very low price. Any of the books will be forwarded, postage paid, to any address on receipt of the price.





is published semi-monthly—on the 1st and 15th of each month. It is devoted to telegraphic news, commercial, railroad and telephonic branches, social as well as scientific; it is a record of the wonderful growth and progress of the telegraph and telephone, and a faithful chronicler of all the changes and improvements in electrical science.

#### WHAT SUBSCRIBERS GET.

THE OPERATOR in the course of a year furnishes its readers with 24 numbers, each containing an average of 20 pages of interesting reading matter, being 480 pages, or 1,440 columns during the year. This is equal in one year to at least 2,500 PAGES OF AN ORDINARY BOOK. In addition to being kept fully informed on every matter of interest to them occurring at home or abroad, subscribers, by saving their copies, can readily turn to dates and events with which it might be desirable at any time to refresh their memories. More or less complete files bound or unbound, are always salable, and generally bring many times their original cost.

#### IMPROVED, INCREASED IN SIZE, BUT REDUCED IN PRICE.

THE OPERATOR has been enlarged and improved until it is now eight times as large as (and certainly of at least eight times more value and general interest than) it was when first started. Yet the price to-day is actually LESS than it was then. In fact, the paper is now furnished to subscribers at a price that DOES NOT COVER THE BARE COST OF PRODUCTION, our object being to secure a large circulation, and trust to advertising for our profits.

#### THE GROWTH OF "THE OPERATOR."

Any one who will take the trouble to compare the little four-page OPERATOR of seven years ago with the twenty-four page, cosmopolitan journal of to-day, will see the vast improvement. The paper was then managed by two working operators in the intervals between more serious undertakings. It now occupies the undivided attention of several business men and a large editorial corps, and circulates in every quarter of the globe, wherever the telegraph is worked. We are still anxious to make THE OPERATOR as efficient as the unstinted expenditure of money and the exercise of diligence and discrimination, with the aid of every modern appliance, can make it; and we hope that those who have found instruction or pleasure in its columns in the past will repay us for our efforts by giving us their co-operation in our endeavor to place a copy in every telegraph office and telephone exchange in the United States and Canada. The greater its circulation the stronger will be its influence, and a journal devoted to the interests of the toiling operator can never be too strong.

#### A STALWART, UNCOMPROMISING JOURNAL.

THE OPERATOR is a stalwart, uncompromising telegraphic journal. Its cardinal principles are honesty of purpose, integrity in business affairs, courage, independence, genius and industry, and its chief aims are to elevate the profession, to popularize electrical science, and to cement the fraternity in one compact body, thus rendering it proof against assault from all quarters. THE OPERATOR has already become known as the sturdy friend of the widow and orphan, the unfortunate and oppressed, wherever found.

#### AN AVERAGE OF 67 4-5 COLUMNS OF MATTER PER ISSUE.

Acting upon these principles, and in order to accord the widest range to every subject, THE OPERATOR, from the first of January until the 15th of November, 1881—ten months—published 452 PAGES OF SOLID, SUBSTANTIAL READING MATTER,

being an average of 22 3-5 pages, or 67 4-5 columns for each issue. Every issue has been teeming with news, scientific essays and the social gossip of the profession, including the airiest fancies and the gravest facts, but all worthy of the culture and great intellectual power now so marked in our profession.

#### CAREFULLY AND CONSCIENTIOUSLY EDITED.

THE OPERATOR is carefully edited in every department by a large and well-chosen editorial staff, which includes some of the finest telegraphic statisticians, astute thinkers and philosophers in this most remarkable business. We regard it as our peculiar province to find out at any cost what is going on telegraphically; to make it public in a truthful and lucid manner; to expose shams and frauds of all kinds, high or low; to give praise where praise is due, irrespective of prejudice, and to do some courageous and vigorous thinking thereon. As every item is, as far as possible, tested and proved before being printed, we find our editorials largely quoted, both at home and abroad, as authority upon all telegraphic subjects. Under the title of "editorial" we might also, perhaps, class a subject which is now attracting wide attention for its conciseness, truthfulness and sweeping scope, viz.: The

#### "REVIEW OF THE PAST TWO WEEKS,"

covering all telegraphic events of importance, and the doings and sayings of those who are written and read about.

#### A FAITHFUL RECORD OF CURRENT EVENTS.

THE OPERATOR also aims to be a complete record of the births, marriages, deaths, appointments, promotions, transfers, resignations and all the social gossip of the profession, refraining, however, from all that might be injurious or offensive to innocent or well-meaning persons. It maintains

#### INTELLIGENT AND LIVELY SPECIAL CORRESPONDENTS

at all important telegraph and telephone centres; on the frontier, in Europe and the Pacific Archipelago; and it uses the telegraph freely for news of events transpiring a short time before going to press.

#### CONDENSED PRACTICAL SCIENTIFIC INFORMATION.

While not aiming to be severely scientific, THE OPERATOR'S "Scientific Column" contains a carefully prepared epitome of all current thought and experiment in electrical matters, as communicated to us by our leading scientists, or culled from the scientific journals of America and Europe. Foremost in this department are the excellent

#### "NOTES AND QUERIES" OF MR. T. D. LOCKWOOD,

which have won a well-deserved place in the record of electrical science. These articles, plainly written, form one of the most efficient helpers for a young man desirous of studying the science.

#### LONG SEMI-MONTHLY LETTERS FOR 4 CENTS EACH!

Just think of this: If you had a friend who proposed to send you twice a month a long letter, containing all the news and other information mentioned above, and such other matters connected with your business as it was to your interest to know, and if he agreed to do this for ONE DOLLAR A YEAR—less than sufficient to pay for writing paper and postage—and you knew that he was perfectly responsible and would do as he promised, don't you think it would be rather short-sighted on your part not to accept his proposition? Yet that is precisely what THE OPERATOR offers to do, and is doing, although it spends THOUSANDS OF DOLLARS A YEAR in carrying out the contracts.

#### WHY EVERY OPERATOR SHOULD READ "THE OPERATOR."

It is controlled by no company or faction, and aims solely to serve the best interests of the telephone and telegraph employees. The average newspaper, propitiated with liberal orders or advertising, never dares to give the true state of affairs with regard to the working operator; indeed, it may truthfully be said that the American telegrapher never had a journal to say one word in his behalf and never had any influence or weight in telegraphic affairs until he commenced to do his own printing. All the traditions, all the history and even the very existence of THE OPERATOR depend upon the great rule of allowing

#### THE LOWEST OPERATOR AN EQUAL CHANCE WITH THE HIGHEST OFFICIAL

to "speak his piece," and to spread his suggestions and grievances before his superior officers or fellow-workers. In fact, all the thoughts, all the aspirations, and all the hopes of the profession were utterly lost until THE OPERATOR caught them up, bound them into sheaves and preserved them by "the art preservative of all arts" for all time.

As an organ of opinion, THE OPERATOR is

#### FIRST, LAST AND ALL THE TIME FOR OPERATORS AND THEIR BEST INTERESTS.

Telegraphic and kindred topics are recorded and discussed as they arise, while its record in defending the widows and orphans of unfortunate telegraphers requires no comment. While it is a well-known, staunch supporter of the members of our craft, it is, at the same time, never to be blinded to their faults, if any are found to exist; and, believing it is better to touch and heal, to cast out and chastise those who are unworthy of confidence, it points them out,

#### NO MATTER WHAT POSITION THEY MAY OCCUPY.

While aiming to expose, and so to correct, all that is deceptive, unjust or corrupt in official life, we do not regard it as productive of good results to the profession at large to give these unpleasant matters undue prominence before an effective effort is made privately to correct them.

But, to the toiling operator, clerk and lineman THE OPERATOR should need no word of indorsement; for, as the accredited organ of the profession, it has advanced so far in prosperity as to be

#### ABSOLUTELY INDEPENDENT OF ALL OFFICIAL INFLUENCE,

as well as cliques and factions of all kinds. THE OPERATOR has never yet hesitated to face any emergency, no matter from what quarter it came. The position we take on any question is the one which seems to us to be for the best interests of the profession and of the fraternity and any threat or pressure tending to make us swerve from

#### THE TRUE PATH OF CONSCIENTIOUS DUTY AND PROFESSIONAL ETIQUETTE

can have no possible effect in changing our course.

There are also other reasons why THE OPERATOR justifies the generous support which it now receives. The wonderful fecundity of our inventors, whose discoveries are following rapidly one after the other, and the great number of gigantic enterprises already projected, present

#### A WIDE AND PROMISING FIELD FOR THE AMBITIOUS

and promising young man. Now, it stands to reason that the operator who does not read his class paper must soon become a kind of telegraphic Robinson Crusoe. He must necessarily remain

#### IGNORANT OF THE PROGRESS OF TELEGRAPHIC EVENTS,

and it is certain that no one who is badly informed on this subject can ever hope to raise himself above the level of the ordinary ruts of daily life. Therefore, no operator who expects to

#### PROFIT BY THESE ENTERPRISES,

or even to secure for himself a better-paying situation in the thousand and one changes which these new plans, schemes and ever-changing combinations produce,

#### CAN AFFORD TO MISS "THE OPERATOR" FOR A SINGLE ISSUE,

since he cannot in any other way be made acquainted with his general prospects; and the odd number which he misses may be the very one which would otherwise have given him the hint that led on to fame and fortune.

#### THE NATIONAL PORTRAIT GALLERY AND OTHER ILLUSTRATIONS.

During the year 1881 THE OPERATOR published pictures of Gen. Eckert, Messrs. Bates and Doren—the trio that made the American Union famous—Theodore N. Vail, General Manager of the American Bell Telephone Co., all full-page illustrations; Operators Albert S. ("Patsey") Ayres, of Cincinnati; William D. West, of New Orleans; P. J. McMahon ("Paddy Mack"), of Boston; John C. Sherer, of California, and John Lenhart, the Citizen of the World. Besides these, the present volume has produced some splendid illustrations, with full description, of the Chicago Police and Patrol system, and other matters of current news.

#### REVIEWS AND ESSAYS

of great interest and intrinsic value appear in each issue, while the occasional humorous articles of "Werner" are too well known to need commendation.

THE REVIEW OF THE YEAR, published in our issue for January 1, is alone worth a year's subscription to the studious telegrapher.

#### CONTENTS OF ONE VOLUME.

The back numbers for the year 1881 also contain an exhaustive review of the Consolidation of the Western Union and American Union Companies, and the ensuing lawsuits; the effort of the Postal Telegraph advocates; full and dazzling accounts of the Paris Electrical Exhibition and the Congress of Electricians at the same place (THE OPERATOR having had a special correspondent in the Palais de l'Industrie during the whole of the Exhibition); gradual progress of the telegraph and telephone; valuable statistics and important and most interesting comparative statements; financial reports; railroad telegraphs; salaries paid; fast sending—time made and number of words sent in a given time; new companies formed; biographies and obituaries of noted men and women; the electric light; new inventions; telegraphic and telephonic conventions, telegraphic journalism; the telephone, in all its phases; ocean cables; remarkable anniversaries, and the progress of the telegraph in England, the continent of Europe, India, Australia, South America and all other places abroad.

#### PROMPT SERVICE AT AN INSIGNIFICANT COST.

All this reaches you regularly, just as a faithful correspondent would write you a long letter by mail twice a month, and costs you only four cents a letter! In providing for this slight expense, there are many small outlays which could be abolished to counterbalance the cost. You might dispense with the daily papers, and you might even get along without your local paper, but you ought not to think of being without the journal of your own profession—the operators' organ—the only paper in the world published in the interests of the fraternity of which you are a member. The price,

#### ONE DOLLAR FOR A WHOLE YEAR,

is nothing compared with the benefit you will receive from a perusal of THE OPERATOR during the next twelve months. Try it and you will be convinced.

#### WHY ALL WIDE-AWAKE OFFICIALS SHOULD READ "THE OPERATOR."

No official organ of any particular company can ever be of use in guiding the wide-awake official. It is admitted that nothing in the newspaper world could have less influence than an "official organ," since its recognized position and common fame put it in the light of piping always to the same creaking key; and its reports being always colored are consequently



utterly valueless as matters of record. THE OPERATOR, on the other hand, looking merely at its independent position, must be an admirable corrective instrument, for the better class on both sides study its reports, and all admit that it is the fairest field for friendly controversy, exhortation, explanation and good-natured criticism regarding all that pertains to the interest of telegraphers. It is, as has been well said of the press in general, like an eruption of Vesuvius—a sort of safety-valve by which ideas and feelings which, if they remained imprisoned, would result in earthquake, are released, ejecting with them a good deal of mere steam, a great quantity of ashes, and a certain amount of lava, that, by its crumbling ultimately covers the soil with smiling vineyards and benefits to mankind.

These facts are gradually becoming understood among officials, and the journal which, in a manly, straightforward way, tells them when they are wrong commands their respect. THE OPERATOR is the

ONLY COMPLETE INDEX OF AMERICAN TELEGRAPHIC LIFE, a continued story of our thoughts and actions as a body, without a knowledge of which any one is unfit for successful telegraph leadership.

#### WHY ALL TELEPHONE MEN SHOULD READ "THE OPERATOR."

The progress of the telephone has been such, and so many of our very best men have gone over to that branch of our profession, that it demands especial attention at our hands. We have, therefore, commenced a new department of this paper, devoted exclusively to the telephone, its rise and progress, and every-day gossip in connection therewith. We receive regularly items of this kind from the various telephone exchanges throughout the country. Indeed, the Telephone Department of THE OPERATOR jumped at once into popular favor, and is now eagerly read by the members of that important and fast-growing branch of telegraphy. In the present volume are to be found complete accounts of the famous litigation between the English government and the telephone people; the telephone conventions, with much interesting data, and a record of long-distance telephoning. The lucid and elaborate papers of Mr. T. D. Lockwood, discussing practical telephonic subjects in popular language, are so well known and so deservedly popular among telephone men as to need no comment here.

#### WHY EVERYBODY SHOULD READ "THE OPERATOR."

A profession like ours, growing daily, hourly, and with its various branches in the telephone companies, the railroads and Signal Service, the working members of all of which are unsurpassed in activity, ingenuity and the importance and effectiveness of their work, should support a FIRST-CLASS, THOROUGH-GOING, INDEPENDENT PAPER, to be spread broadcast over the civilized world.

SCIENTIFIC MEN AND STUDENTS SHOULD READ "THE OPERATOR," because it is a complete, connected and well edited record of electrical progress. Avoiding the redundant fulness and dry details of scientific research, it is careful to preserve the important facts in all that it is necessary for the scientific student to know. Ever since the introduction of the telegraph, men have been writing voluminously upon electrical subjects, but their efforts have been rather too deep for the ordinary student. Our articles are, therefore, written with a special desire to avoid that great stumbling block to the acquisition of electrical knowledge; to disentangle the multiplicity of knotty questions and to

PRESENT THEM STRAIGHT AND SMOOTH TO OUR READERS,

thus affording the junior members of our profession an opportunity of mastering, in an easy way, the most intricate questions.

#### A WORD FOR OUR ADVERTISERS.

The support so generously given to THE OPERATOR has enabled us to print, each issue, many extra copies for circulation abroad, in addition to our regular edition, until the paper is now mailed regularly to all parts of every State and Territory on this continent, and to every country abroad, wherever the English language is read. The reduction of our subscription price to ONE DOLLAR A YEAR, together with the attractive make-up of the paper, and the earless, enterprising and reliable attitude which it assumes, have made it a great favorite, and promise to induce

EVERY TELEGRAPH AND TELEPHONE MAN IN THE UNITED STATES AND CANADA, to become a subscriber; in fact, the paper is more than keeping pace with the existing development of the telegraph.

THE OPERATOR has now the largest circulation among regular paying subscribers of any telegraphic paper in the world. It is, therefore,

#### A VALUABLE FIELD FOR ADVERTISERS,

and, in connection with the reasonable rates which we afford them—for, notwithstanding that OUR CIRCULATION HAS MORE THAN DOUBLED DURING THE PAST YEAR, our advertising rates have not been increased—it forms the very best means of spreading their wares before the world.

#### READ WHAT IS SAID OF THE OPERATOR.

"A bright, sparkling telegraphic paper, and employs all the brightest lights in the fraternity, at a fair remuneration, as contributors."—*New York Correspondent*.

"THE OPERATOR is a thorough-going, enterprising and scholarly paper, and well represents the culture and rapid progress of the telegraph."—*Philadelphia North American*.

"We congratulate Mr. Johnston on his well-merited success in this peculiar field of literature. THE OPERATOR circulates among about 25,000 telegraphers in this country."—*Philadelphia Sunday Mercury*.

"There is no telegrapher who takes an interest in his business but who should become a subscriber to a journal which is the sole mouthpiece of the telegraphic profession—its only representative in the 'press' of the country."—*Philadelphia Correspondent*.

"Many of its issues have been models of taste in the arrangement of its selected articles, and the scope and spirit of its editorials and correspondence. It is spirited, cheerful, vivacious. It has a large subscription list, and the odor of the operating-room pervades its pages. Such a paper is only possible in an intelligent staff of men such as work the wires of the American lines."—*Telegraph in America*.

"THE OPERATOR is an independent, wide-awake and highly successful telegraphic and scientific newspaper, written, managed and sustained purely by practical operators, and should find a warm place in the heart of the 20,000 telegraphers in America. Pictures drawn or engraved by telegraphers, and portraits of the most prominent operators are published periodically, while the great fund of bright wit and curious experience so closely allied to the life of every telegrapher, forms its main topics."—*Philadelphia Inquirer*.

"The telegraph operator who takes no professional journal has too little pride in his personal improvements to be of much service to the company he works for. There are operators who take no professional paper whatever, who yet spend in a year many times the price of one in cigars, tobacco and beer. Who are they who fill the highest, most responsible positions in the telegraph business? Are they those who are content with the bare ability to send and receive? How many of them, do you suppose, are without a professional journal?"—*Cincinnati Correspondent*.

#### TERMS OF SUBSCRIPTION

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To foreign countries in the Universal Postal Union—which includes Newfoundland, England, France, Germany, Australia, etc.—the price, postage prepaid, is only \$1.25 per annum. To countries not in the U. P. U., the subscription is \$1.50.

We much prefer yearly subscriptions, and they are more satisfactory to subscribers themselves but to those who desire to subscribe for a shorter period we will mail the paper, postage prepaid, for nine months, for 75 cents; six months for 50 cents, or three months for 30 cents.

Should any difficulty arise in procuring copies, direct communication with the publisher is

requested. Specimen copies, singly or for getting up clubs, mailed free on application to the publisher. In case subscribers should at any time fail to receive their copies of the paper regularly and promptly, they have only to notify us, when the matter will be immediately investigated and remedied.

Should you change your residence at any time—no matter how often—you have only to notify us and the paper will be sent to your new address. We prepay all postage, too, so that you have no further expense of any kind, except the subscription price, and you are under no obligation to take the paper for a longer period than that for which you pay. If the subscription be not renewed when it shall expire, the paper (as is our invariable custom, will promptly be stopped.

Subscriptions can commence at any time.

**We will send THE OPERATOR from December 1, 1881, until January 1, 1883, postage prepaid, for ONE DOLLAR.**

Send in your name at once and take advantage of the above SPECIAL OFFER.

#### INSTRUCTIONS ABOUT REMITTING.

A one dollar bill, in an ordinary unregistered letter, addressed to W. J. JOHNSTON, PUBLISHER, No. 9 MURRAY STREET, NEW YORK CITY, will almost unquestionably reach us. Larger amounts should be sent by post-office order, draft, registered letter or express, in which case they are at our risk. For fractions of a dollar, or where it is inconvenient to send cash, U. S. 1, 2 or 3 cent postage stamps will be accepted. If Canadian postage stamps are remitted, 12 per cent. additional should be sent to cover discount on them here. Canadian currency will be accepted at par. Don't send mutilated or worn-out currency. Silver, except in small amounts, should not be sent in an unregistered letter. It is always more satisfactory to send remittances to the publisher direct, in which case you will know that the money will be received and the order promptly attended to.

Many would doubtless like to send for THE OPERATOR who are deterred by the supposed great trouble and risk of sending money by mail. The fact is, however, that there is very

#### LITTLE TROUBLE AND ALMOST ABSOLUTELY NO RISK

in ordering in this way. We get thousands of letters every year ordering the paper and some of our books, and it is very rarely indeed, either that a letter sent to us goes astray (and then only when the sender has addressed it incorrectly), or that a package mailed by us fails to reach its destination. If you have never hitherto ordered anything from New York, send us an order now for THE OPERATOR and some of our books, and you will see that they will reach you by return mail. All orders, unless in cases where there is a necessary delay, such as in the printing of names on cards, are attended to and sent by mail or express the same day they are received. Be sure to give your full name and address, and you will have no trouble about receiving the goods promptly. Should they, however, for any reason, not reach you in a reasonable time, drop us a postal card and we will ascertain the cause of delay and rectify it. REMEMBER, WE PREPAY POSTAGE ON ALL OUR PUBLICATIONS—BOTH THE OPERATOR AND THE BOOKS.

Remit by post-office order, draft, registered letter or express, U. S. postage stamps taken. Address communications and make orders payable to

W. J. JOHNSTON, Publisher,

NO. 9 MURRAY STREET, NEW YORK.

#### TO FRIENDS OF THE OPERATOR.

The publisher presents his compliments to you and congratulates you upon the improvement in THE OPERATOR which he has been enabled to make during the year as the result of your co-operation with him. He has a proposal to make, and one which bears a direct relation to your interest as to his own, and proceeds to state it without further introduction.

You are invited to assist the publisher to make THE OPERATOR even better than it is now. There was a time when the subscription list was much smaller than at this writing. Like many other large things THE OPERATOR had a small beginning, but it has steadily grown and improved as more and more subscribers have been added to the list. In the future, as in the past, the publisher will faithfully respond to his increasing subscription list. You can help to further enlarge the size and improve the value of THE OPERATOR by your co-operation with him. Inducements to the formation of clubs are stated in another place. Give yourself a little enjoyable labor in order to make THE OPERATOR the best telegraphic paper in the world.

A good plan would be to send operators of your acquaintance a copy of the paper and afterwards confer with them about it over the wire. There would be no difficulty in this way of emphasizing to them how interesting, varied and instructive are its contents. Nor could there fail to be a large proportion of responses, because the more THE OPERATOR is examined and spoken about the better it is liked. Subscribers continue right along after once beginning, and so would your friends.

The success of others in the past, who assisted when such liberal offers as are now made were not practicable, is a guarantee that your time would not be wasted did you give yourselves the pleasure of setting about inducing your friends to bear you company in promoting the value of THE OPERATOR by the extension of its circulation. Copies of the paper and circulars of a helpful sort will be sent free to those who need them in order to carry out what is herein proposed,



## THE OPERATOR

Was never so good as it is To-day, nor its Subscription List so Large.

In view of the recent enlargement and improvement in the paper, and the addition of the "National Portrait Gallery" and other new and desirable features, it is hardly necessary to assure the fraternity that in the future as in the past, our conscientious and earnest effort shall always be to FURTHER IMPROVE THE PAPER until it shall be just AS VALUABLE TO SUBSCRIBERS as MONEY, PAINS AND DILIGENCE CAN MAKE IT.

Those acquainted with the progress of THE OPERATOR are aware that—notwithstanding the extremely low subscription price—the paper has WONDERFULLY IMPROVED, especially within the past year. We believe, however, that DURING THE ENSUING YEAR it will be found very MUCH BETTER, MORE INTERESTING and MORE INSTRUCTIVE than at any previous time since it was established—so much so, indeed as to be ABSOLUTELY INDISPENSABLE to those who desire to be kept informed on all telegraphic subjects, and wish to qualify themselves for promotion.

We offer VERY LOW COMBINATION RATES where one or more of our books are ordered in connection with the paper. When the order amounts to \$4.00 OR OVER, we allow A DISCOUNT OF NO LESS THAN 25 PER CENT. from the regular retail price. Intending subscribers should avail themselves of this combination offer, and thus secure such of our books as they shall require at LOWEST WHOLESALE PRICES.

The success of THE OPERATOR depends in a very great measure upon the telegraphers themselves. It is our earnest desire that the paper shall be as able, useful and influential a journal as it can be made, and to have it circulate, if possible, in EVERY TELEGRAPH OFFICE IN THE UNITED STATES AND CANADA. If you lend us your co-operation to this end, we shall consider it a great favor.

You can render us a service which we shall not be slow to appreciate, if you will assist us in increasing our subscription list, BY GETTING THE NAMES OF A FEW SUBSCRIBERS TO SEND US. The larger our list of subscribers, THE BETTER THE PAPER CAN BE MADE and the MORE INFLUENCE IT WILL HAVE. EVERY telegrapher should, therefore, take a PERSONAL INTEREST in extending its circulation.

### TO TELEGRAPHERS.

The publisher wishes to direct your particular attention to his holiday announcements, because they afford an opportunity for both you and him to aid the happiness of the coming festival season with the rewards of pleasant labor. This is the season in which people improve the joys of home and of friendship by making presents to each other. Now there is no more desirable pledge of affection or goodwill than the gift of a book containing, as Milton says, "The precious life-blood of a master-spirit." Such a book is pre-eminently that one respecting which you can see extended remarks in a circular accompanying this. A holiday edition of the poems of Wordsworth, edited and with an introduction by Richard Henry Stoddard, beautifully bound and illustrated, is offered to the public at three dollars. It is a remarkably cheap book at the price, because well made as well as ornamental, and a lasting treasure in its reading matter and appearance. The publisher thinks that every telegrapher and telephone man who reads these words could sell some copies of this book, and he invites co-operation from all. He offers to send three or more copies of the book for \$2.25 each, a profit of 75c. on each copy. As telegraphers have a large acquaintance with well-informed people, it would be easy for them to procure some orders for the book. For four orders at regular retail price, the publisher will send an extra copy of the work free, and postage or express charges prepaid. For twelve yearly subscriptions to THE OPERATOR he will send a copy of Wordsworth free as a premium, and for fifteen yearly subscriptions a copy of Wordsworth and "Telegraphic Tales and Telegraphic History," a book which no operator should be without.

If you show these advertisements to acquaintances they will assist you to get orders for the books described in them. It isn't necessary to point out what an opportunity you and your friends have to "chip in together" for Wordsworth and get a splendid volume for \$2.25 each.

## HOW SOME OF OUR BOOKS MAY BE SECURED FREE.

### Valuable Premiums for Clubs.

The Publisher is anxious to very much further increase the circulation, and consequently the influence and usefulness, of THE OPERATOR, and desires the hearty co-operation of the fraternity at large in the efforts he is now making to that end. There are very few telegraph or telephone men who cannot, if they will, render valuable aid in this respect. To induce as many as possible to at once "put their shoulders to the wheel," we offer the following remarkably liberal premiums for clubs:

- For 2 YEARLY SUBSCRIPTIONS, we will send FREE AND POSTAGE PREPAID
- "TELEPHONE AND OSHKOSH" or "OAKUM PICKINGS" (paper).
  - " 3 " "OAKUM PICKINGS" (cloth), "WIRED LOVE" (cloth), or "SAM JOHNSON" (paper).
  - " 4 " "TALES AND HISTORY," "THE DICTIONARY," "LIGHTNING FLASHES," "GENERAL GRANT," "CHRISTMAS EVERGREENS," or "SAM JOHNSON," (cloth).
  - " 12 " "WORDSWORTH."
  - " 12 " A STEEL LEVER KEY.
  - " 16 " A pair of HOLCOMB'S "AUTOMATIC" ACOUSTIC TELEPHONES.
  - " 18 " "MORSE," "HOME" or "GEM" LEARNERS' OUTFIT.
  - " 20 " PRESCOTT'S "ELECTRICITY AND THE ELECTRIC TELEGRAPH."
  - " 20 " A GIANT SOUNDER.
  - " 20 " Pair of "ELGIN" ACOUSTIC TELEPHONES.
  - " 20 " PREMIUM LEARNERS' OUTFIT.
  - " 20 " Any TELEGRAPH (Scientific or Popular) BOOKS, to the amount of FIVE DOLLARS.
  - " 20 " A "LATTIG," "CUMMING," "DELANY" or TOP CONNECTION KEY.
  - " 30 " "WORDSWORTH," "CHRISTMAS EVERGREENS," "TALES AND HISTORY," "WIRED LOVE," "OAKUM PICKINGS," "LIGHTNING FLASHES," "GENERAL GRANT," "THE AMERICAN POPULAR DICTIONARY" and "SAM JOHNSON" (all bound in cloth).
  - " 30 " "GIANT" SOUNDER and STEEL LEVER KEY.
  - " 35 " Pair HOLCOMB'S "AMPLIFYING" TELEPHONES.
  - " 50 " SHAKESPEARE'S COMPLETE WORKS, HUDSON'S NOTES (6 vols., cloth, gilt.)
  - " 60 " "LIBRARY OF UNIVERSAL KNOWLEDGE (15 vols., 13,000 pages, 6×9 inches), embracing Chambers' "Encyclopedia," with American additions, making the work thoroughly American, and "worth its weight in gold" to every studious telegrapher.
  - " 60 " A SILVER WATCH.

All book premiums will be forwarded postage or express charges prepaid by the publisher.

If other premiums than those mentioned above are desired, they can be had for a proportionate number of subscriptions, according to value. Where a cash commission is preferred, deduct 20 per cent. before remitting.

Renewals count same as new subscriptions. Two half-yearly or four three months' subscriptions are equivalent to one yearly subscription. You can take credit for your own subscription same as for any other.

The number of subscriptions necessary to secure any premium can be much reduced by sending us, in addition to the subscriptions, orders for some of our books. Should any agent find it impossible to obtain sufficient names or orders to entitle him to the premium he wishes, the difference can be made up in cash, when the premium will be at once forwarded him.

Should sample copies of THE OPERATOR, or of circulars, or further information of any kind, be desired, drop us a postal card and they will be promptly mailed you.

Send in names and money as fast as received, which will be placed to your credit and can be added to at any time.

Remit by post-office order, draft, registered letter, or express, and give your full name and address every time you write.

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graphers, all the lights of the profession having banded together to give us a book well worth reading.

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We will send to the same or separate addresses any two of the books marked at \$1.00 for \$1.75, and THE OPERATOR for fifteen months in connection with any one dollar book for \$2.00.

### How You may Add to Your Income.

Enterprising operators along the line of railroads and in large cities can add a comfortable sum to their income by selling our books to their co-laborers and friends, and availing themselves of the liberal discount which we give to agents.

Canvass your district, then send us an estimate of how many books you can dispose of, with their names, and we will give you such a rate on the entire consignment as will leave you a respectable margin for yourself.

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This is the most pretentious volume we have yet attempted. Every illustration it contains was engraved especially for it, by the foremost of American engravers. There are no fewer than 74 engravings in the book, and they are all large, nearly every one being what might be called full page.

The book is unusually prettily bound, with a profusion of gold on the side and back, and gilt edges. The design for the cover was made especially for it, by an artist whose reputation for such work is national.

For the purpose of securing the proper margin, the paper—which is thick, fine and of a rich cream tint—was also made to order; and throughout no expense was spared to add to the beauty, value and attractiveness of the book.

### This is no Reprint of an English Edition.

The cuts are all new and the plates made from new type. No such elaborate edition of Wordsworth has ever been published on this side of the Atlantic. Similar works published in England, not any handsomer than this, and, indeed, not so handsome, cost from \$9 to \$12 a copy. The price of the present volume, however, puts it within the reach of every telegrapher wishing to make a holiday present. The book is all ready and orders will be filled as soon as received.

Agents Wanted for the New Book, to whom we will allow liberal commissions.

**"The Operator" for One Year and a Copy of Wordsworth will be Mailed Together, Postage Prepaid, for \$3.50.****"Tales and History," or any of our other \$1.00 Books, at the same Price—\$3.50.****"Wordsworth" and "Christmas Evergreens" together, both prepaid, only \$3.75.****"Tales and History," "Christmas Evergreens" and "Wordsworth," \$4.25.****"WORDSWORTH," "CHRISTMAS EVERGREENS," "THE AMERICAN POPULAR DICTIONARY," "TALES AND HISTORY," "WIRED LOVE" and "OAKUM PICKINGS," all cloth, prepaid, for \$5.00. With THE OPERATOR for fifteen months added, \$6.00.****"WORDSWORTH," "CHRISTMAS EVERGREENS," "TALES AND HISTORY," "WIRED LOVE," "OAKUM PICKINGS," "LIGHTNING FLASHES," "GENERAL GRANT," "THE AMERICAN POPULAR DICTIONARY," and "SAM JOHNSON," all bound in cloth, with "TELEPHONE AND OSHKOSH," paper—making an elegant telegraphers' library—only \$7.50. THE OPERATOR one year and above ten books, \$8.00.**

A copy of "WORDSWORTH" will be mailed FREE to any one sending us orders for FOUR copies of the book at regular price; or to any one sending orders for any of our books, at regular rates, amounting to \$12.00, or for a club of 12 yearly subscriptions to THE OPERATOR.

**W. J. JOHNSTON, Publisher,**  
**No. 9 MURRAY STREET, - - - NEW YORK.**



## PERSONAL.

Mr. H. L. Haupt has been transferred from Tyrone, Pa., to Carlisle, Pa.

M. J. Adams, of Frankton, Ind., has accepted the agency at La Crosse, Ind., on the Pan Handle.

Messrs. Reed and Johnston, who have been in the Atchison, Kan. W. U. office for a short time, have left for Mexico.

Mr. Sam B. Roberts, late of the W. U., has been appointed chief operator for the B. & O. at St. Louis, taking with him Mr. Baker and others.

Messrs. J. Frank Howell and Rus. Gillette are in Grand Rapids, Mich., visiting their old friends. They are just from the West and *en route* for the Metropolis.

Mr. John Johnson and Mr. Peters, the efficient train dispatchers, Mr. J. E. Telley, owl, and John Westrick, day man, are the force for the Central R. R. at Greenleaf, Kan.

Mr. F. P. Wheeler, of the St. Louis, Mo., W. U. office, has accepted a position with the Mutual Union, same city. Mr. Wheeler is a well known and popular telegrapher.

Mr. Edward P. Howarth, night operator at Thirty-third street, on the N. Y. C. R. R., this city, has been transferred to a position as day operator at Willopee on the N. D. & C. R. R.

The six-year-old son of Mr. A. L. Cool, agent and operator of the G. R. & I. R. R. Co., Tustin, Mich., fell into a tub of boiling water, Nov. 22, and was so badly scalded that death ensued in a few hours.

If you have a young lady friend to whom you desire to make a holiday present, read the Christmas announcements in this issue. Unless you are extremely difficult to please, you will find something to suit you there.

Mr. Tracy R. Edson, for many years prominently identified with the Western Union and Gold & Stock Telegraph Companies, American Speaking and Metropolitan Telephone Companies, the Edison Electric Light Co., etc., died in this city on Tuesday, Nov. 29.

John H. Kratz, formerly operator at Paschallville (P., W. & B. R. R.), Pa., will hear something to his advantage by communicating his present address to T. P. Harvey, Western Union Telegraph Company, Doylestown, Pa. A legacy has been left him.

Mr. M. E. Johnson, for the past seven years manager of the W. U. Carbondale (Pa.) office, has accepted a position as operator at Hornellsville, on the N. Y., L. E. & W. R. R. Mr. T. H. Bower is his successor at Carbondale.

John Brady, the well-known lineman of the Central Branch Missouri Pacific R. R., has just completed a branch line for that road, from Jamestown to Yuma, Kan., a distance of 60 miles, with two sets of repeaters at Yuma.

Mr. W. E. Jermain, who has been manager of the W. U. Tel. office at Elkhart, Ind., has resigned his position on account of ill health. Miss M. O. Fenton has been appointed manager. Miss Fenton, though a young operator, is an efficient one.

Mr. Charlie Patch, of Des Moines, Iowa, a well-known telegrapher, died at his residence in that city on Tuesday, Nov. 22, and was buried on Thursday, the 24th. A beautiful floral offering from the Chicago telegraphers was received by the family.

Mr. E. M. Riddle, inspector of the St. Joseph (Mo.) Telephone Exchange, after an absence of six weeks at his old home in Pennsylvania, is expected home again with one of the old Keystone's fair daughters as his bride. His numerous friends will give him a warm reception.

Mr. George M. Myers is manager and Alexander F. Washington day chief at St. Joseph, Mo. The day force consists of Miss Baylies, Miss Eib and Mr. Harnet, and the night force of A. H. Burke, night chief, and J. D. Prosser, press operator. Two last named leave for St. Louis today, Dec. 1.

Sergt. W. T. Blythe, who has for the past three years been chief operator of the Texas Division, U. S. Military Telegraph Lines, returned from a thirty days' leave of absence, Nov. 3, and has resumed his duties at Department Headquarters. Sergt. James A. Gleason acted as chief operator during Mr. Blythe's absence.

Dispatcher Ross, of the Grand Trunk Railway, Cornwall, and George Betts, of Vandreine, Quebec, have resigned their positions and gone to Chicago. Jack Shannon, of St. Anns, has gone to the Chicago & Grand Trunk. Assistant Superintendent Stevenson, of the same road, has also resigned, and is succeeded by Mr. T. H. Cooper, of Toronto.

The remains of Thaddeus F. A. Clock, until recently telegraph operator and ticket agent for the Long Island Railroad Company at Mineola, L. I., who threw himself in front of a train at Bellingham, Mass., were brought from that place to Islip, L. I., where the friends of the unfortunate young man reside. Young Clock was not indebted to the railroad company when he went away, as was at first reported.

Mr. W. A. Weller is chief dispatcher Western Division L. S. & M. S. Railway at La Porte, Ind. Messrs. H. C. Noah, O. C. Carrell and George Sweetnam are the assistant dispatchers, with Messrs. Arnold, Shultz, Zeisel and Tom Barrett operators. Mr. Noble is manager and Samuel Egnew assistant at the W. U. office. At end of double track, west of La Porte, Mr. P. E. Barkdale works days and Mr. Chas. A. Walker nights.

A Chattanooga correspondent says: Last Monday morning, the handsome and genial Mr. Skelton, who manipulates the Atlanta wire in this office, was missing from his post. As it is the first time within a year it occasioned considerable excitement among the boys, so much in fact, that manager Norris sent a messenger to the home of the absentee to inquire if he was sick. The boy returned with the information that Mr. Skelton was the happy father of a 13 pound youngster.

The force of the Washington, D. C., Mutual Union office is composed of the following well-known telegraphers: Lew. W. Smith, Wm. Andrews and J. W. Collins, Washington; W. B. Upperman, National Associated Press, Washington; Fred A. Kent and J. J. Crawford, New York; Robert McMullen, Harry Jones and E. Bernard, Cincinnati; H. C. Halstead, Springfield; Geo. R. Callum, Richmond, Va., and Washington. Other equally prominent names will soon be added.

The W. U. office at Bloomington, Ill., both receiving and operating rooms, is on the second floor of the building. One would think that in a city of 20,000, with rents comparatively low, the company might accommodate its customers by having at least the receiving department on the ground floor. Mr. A. T. McElhiney is manager of the Bloomington office, assisted by Mr. D. Crain, recently manager of the A. U., same city, and formerly in the telegraph instruction business at Kansas City.

Mr. Tom Yearnshaw (an old-timer) is manager of the Des Moines (Iowa) W. U. office. Mr. John J. Chaddick, of Chicago, has been lately appointed chief operator, and Mr. Fred. A. Howard, of Minneapolis, night chief and press operator. Mr. Ernest Howard has charge of the Board of Trade, and Mr. Bob Dickinson of the delivery department. The office has nineteen wires and soon expects another Chicago wire. The Legislature, which meets in January, will make it hot for the boys, but all appear prepared to put on a bold front to meet it.

"The Deming (N. M.) office," says a correspondent, "doubles with San Francisco, taking nearly all their Eastern business, also sending Western business from the East, doubling with Kansas City. We handle an immense amount of work during the twenty-four hours, and the way in which business is turned out here is something to be proud of. Manager Ben. E. Meredith, of Corsicana, Texas, has taken charge here. Our night chief, Mr. Frank Steele, is a perfect gentleman in every respect. The operating force consists of Mr. Jack Swift, Mr. Davis, late of St. Louis, and Mr. W. G. Ingram."

ALBANY, N. Y.—Mr. George Smith, formerly chief operator in the A. & P., and since the consolidation an operator in the W. U., has been appointed chief operator of the M. U. office, this city. Mr. Smith is quite popular, and well qualified to fill the position. The office is under the management of Mr. Chrales Arnold, late manager of the W. U. Lake George office. Mr. Arnold is a shrewd and enterprising business man, and will, no doubt, get a large portion of the business. Mr. Charles E. Shelley, of the Albany W. U. office, was married on the after-

noon of Nov. 3 to Miss Kate Hagadorn. The happy couple were the recipients of an elegant silver tilting ice-pitcher and goblet.

Charles H. Billings, who was recently discharged in Cincinnati, is known as the "champion talker." About six weeks ago, at a meeting of the Brotherhood of Telegraphers in that city, he was compelled to resign as a member of that body for talking unauthoritatively. He has shown the newspaper reporters sworn statements of exoneration. He also says that even Superintendent Miller is not above reproach in such matters. As testimony of this he states that Mr. Miller recently had a telegram in reference to Mutual Union wire repeated to Mr. Bates for the latter's information. "Superintendents" adds Mr. Billings, "would do almost anything they could to promote their standing in the estimation of their superior officers, as is shown by Mr. Miller's action. That man had no more right to look at that private message than would a superintendent of an express company to examine the contents of a package placed in his custody for shipment."

Two New York operators who worked the wire with Billings were discharged last week.

ROUNDT, N. Y.—Alfred G. McCausland, who has been Supt. of Telegraph and Train Dispatcher for the Ulster & Delaware and Walkill Valley railroads for the past eight years, has resigned his position to accept a better one with the W. & N. R. R. Co. at Wilmington, Del. Mr. McCausland has been an energetic, competent and faithful official, and leaves behind him many warm friends who will recall with pleasure the kind and considerate manner in which he treated all who came in contact with him.

Wm. Montalvo, asst. operator in the W. U. office, this city, has been appointed Train Dispatcher, *vice* Mr. McCausland. Theo. McAllister, of Rhinebeck, fills the vacancy in the W. U. office, where Harry Blanchard is still Manager.

## MARRIED.

LINCOLN—ROUNDS.—Nov. 23, 1881, Mr. W. H. Lincoln, of Boston, Assistant Manager Nat. Bell Telephone Co., Portland, Me., to Miss Mary M. Rounds, of Portland.

FRANK—KENNEDY.—At Bowdoin Square Baptist Church, Boston, Nov. 27, 1881, Mr. Leroy M. R. Frank, of Albany, N. Y., to Miss Alice M. Kennedy, of Boston.

BAIR—SCHWAB.—At the residence of the bride's parents, Pottstown, Pa., Nov. 10, by the Rev. D. K. Kepner, Mr. T. Walter Bair, operator W. U. Tel. Co., Philadelphia, to Miss Annie M. Schwab, of Pottstown.

SCOTT—CAIRNS.—at Prescott, Ont., Nov. 2, by the Rev. T. G. Williams, assisted by the Rev. Mr. McGill, W. H. Scott, Agent Bell Telephone Co., Montreal, to Mary, second daughter of Mr. James Cairns, of Prescott.

## THE FITCH CHLORINE BATTERY.



PATENTED SEPT. 16, 1879.

The cheapest, cleanest, most economical, durable and decidedly the

**Best Open-Circuit Battery**

in use for Telephones, Annunciators and Electric Bells. After several years of constant use, it is pronounced to-day as being far superior in constancy and power to all other batteries for the above purposes, notwithstanding all statements to the contrary. We have made several valuable improvements in this Battery, among which is the substitution of a non-corrosive and adjustable clamp, in place of the old style lead cap, which warrants us in saying that the Chlorine Battery has no equal in the market, and all we ask is a trial.

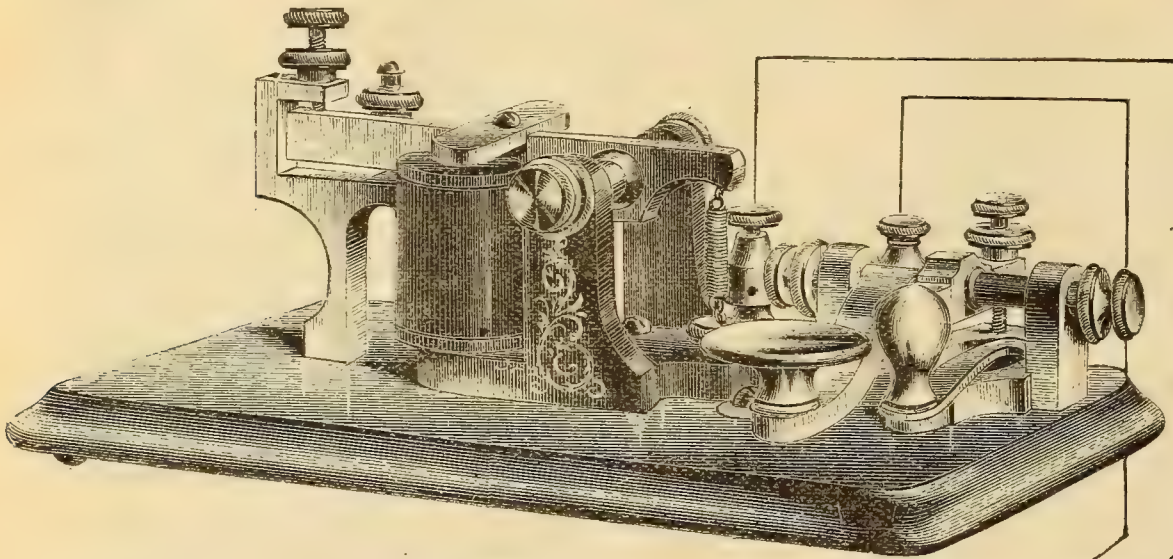
**Price, \$1.50 per cell.**

Liberal Discount to the Trade.

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Sole Agents and Manufacturers,  
NO. 114 SOUTH SECOND STREET,  
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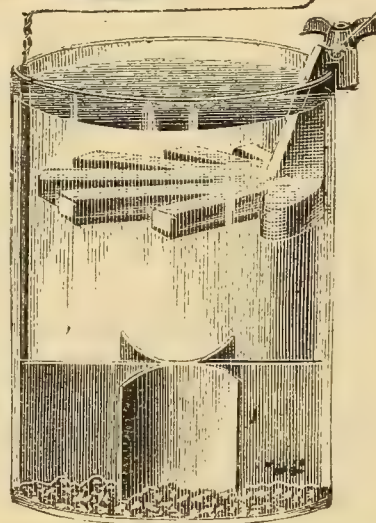
Price, \$4.50, complete with Battery, Book of Instruction, Wire, Chemicals, and all necessary materials for operating.

"Morse" instrument alone, without battery..... \$3.80  
 "Morse" instrument, without battery, and wound with fine wire for lines of one to fifteen miles..... 4.50  
 Cell of battery, complete..... 65  
 "Morse" Learners' Instrument, without battery, sent by mail..... 4.30  
 (Battery cannot be sent by mail.)

GOODS SENT C. O. D. TO ALL POINTS IF ONE-THIRD OF THE AMOUNT OF THE BILL IS SENT WITH THE ORDER.

REMIT BY DRAFT, POSTAL MONEY ORDER, OR REGISTERED LETTER.

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Is a full-size, well-made, complete MORSE TELEGRAPH apparatus of the latest and best form for learners, including handsome Giant Sounder and Curved Key, and a large Cell of the best Gravity Battery, latest form.

It is the best working set of Learners' Instruments for short or long lines, from a few feet up to 20 miles in length.

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IF YOU SELECT THE "MORSE."

We will in every case refund any remittance made us for these goods, if they are not found to be Entirely Satisfactory.

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 Send for circular.

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**TELEPHONE AND TELEGRAPH SUPPLIES**

OF EVERY DESCRIPTION,

**ANNUNCIATORS AND BURGLAR ALARM  
 APPARATUS, BATTERIES AND  
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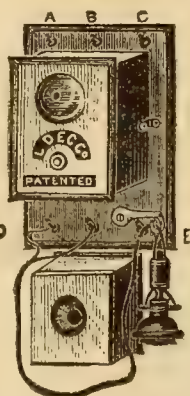
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### CALL BELL.

it can be Operated.

OUR NEW PATENT CALL BELL and has points of merit not possessed by the perfection of convenience; requires a ous assurance to the sender that his call of the line, and the construction is such that a break in the line is IMMEDIATELY INDICATED AT BOTH ENDS BY THE AUTOMATIC OPERATION OF THE BELL.

is constructed on entirely novel principles, any other electric or magneto bell. It is minimum of electric force, gives instantaneous assurance to the sender that his call of the line, and the construction is such that a break in the line is IMMEDIATELY INDICATED AT BOTH ENDS BY THE AUTOMATIC OPERATION OF THE BELL.

We are ready to supply the above call to Telephone Companies, Exchanges, Private Lines, or to any one wanting a CHEAP, DURABLE AND THOROUGHLY EFFICIENT ELECTRIC BELL.

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ESTIMATES FURNISHED.

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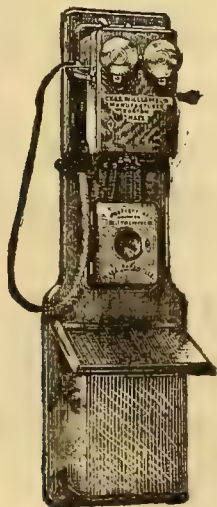
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## THE "LATTIG" [AUXILIARY LEVER NON-STICKING] KEY.

PATENTED AUG. 16, 1881. PRICE, \$5.00. BY MAIL.

This Key is very finely finished, nickel plated and presents a beautiful appearance; is easy to handle and WARRANTED NEVER TO STICK. It has been extensively tried and has received the indorsement of the best operators in the country. It embodies the only true principle to prevent a key from sticking, by having a great separation between the anvil and hammer (without increasing the play of the key lever), thereby preventing the formation of the "Electrical Arc" between the platina points, which is the PRIMARY cause of sticking keys. We claim this key will never fail to make contact.

## "THE EXCELSIOR KEY."

PATENT APPLIED FOR. PRICE \$2.50. BY MAIL.

This Key is made ENTIRELY OF BRASS, nickel plated, with hardened platina points, and it is put forward to meet the long-existing demand for a CHEAP, LIGHT, EASY WORKING, FIRST-CLASS KEY, and is without doubt the CHEAPEST and BEST KEY EVER OFFERED FOR THE MONEY.

## The Giant Sounder Perfected.

Patented Feb. 16, 1875. Most perfect, reliable, clear-toned; fine finish, and warranted the best working sounder in existence. Price, by mail, \$5.00.

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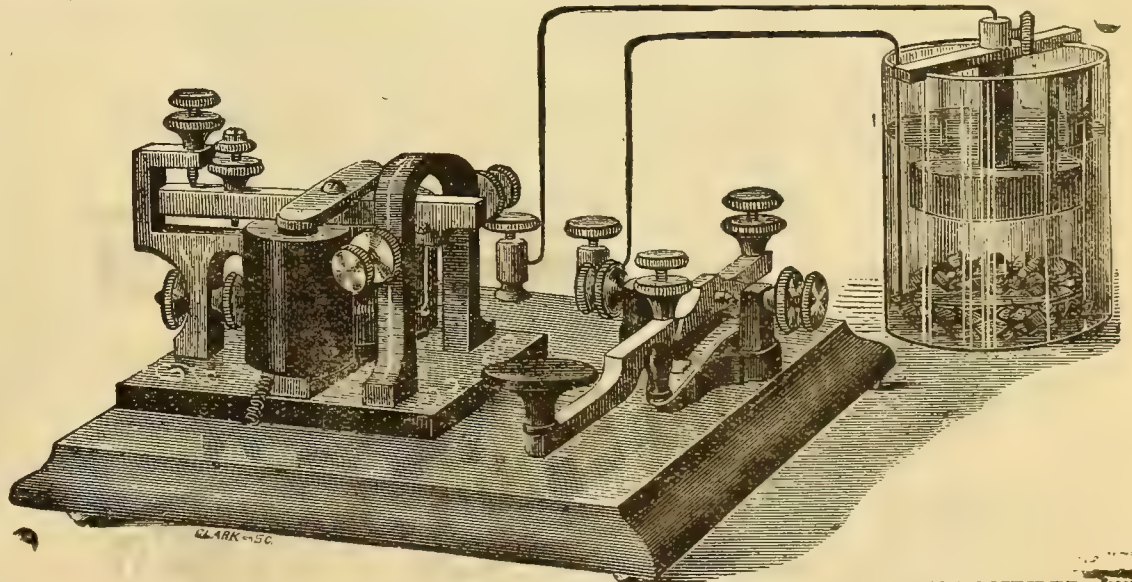
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## Premium Learners' Apparatus.

ONLY \$5.00.

Not the Cheapest, but Guaranteed the Best!



The PREMIUM LEARNERS' APPARATUS and OUTFIT comprises the famous "NEW GIANT SOUNDER, PERFECTED," and the "NEW CURVED KEY," placed upon a splendidly polished base, with a cell of Callaud Battery, Chemicals, Office Wire, and an excellent Book of Instruction, for \$5.00, when the money accompanies the order.

These instruments are the exact size and form of those upon which we received the highest award at the late Centennial Exhibition over all competitors. Everything reliable, and so guaranteed, or money refunded. Our Book of Instruction contains full and explicit information as to setting up the Battery, running of wires, etc.

Price, Complete Outfit.....	Money in advance, \$5 00
" Instrument without Battery.....	" " 4 20
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# ALUMINUM GOLD WATCHES.

A \$15  
WATCH  
FOR  
\$10.



During the past year, we have had many enquiries for a **Stem Winding and Stem setting Watch**, one that could be relied upon, sufficiently attractive for a gentleman to carry and that we could sell at a price low enough to come within the reach of those whose duties compel them to carry a **correct time-keeper**, but whose circumstances will not admit of their purchasing a high priced watch. After going over the whole field of American Manufacture and not finding a watch that would "Fill the Bill" we concluded to look over foreign markets. A member of our firm visited England, France, Germany and Switzerland. In the latter country, he found just what we wanted: **A STEM WINDING WATCH WITH FINE JEWELLED NICKEL MOVEMENT**, (equal to those put up in Gold Cases and sold in this Country at \$100 and \$150.) By giving a large order, we got the price reduced so that we could use them in our trade. The next step was to find the right kind of case for the new watch. Armed with a letter of introduction to Professor Lorschfield (the discoverer and only manufacturer of the celebrated metal known as **Aluminum Gold**), an interview was obtained. Specimens of the metal were exhibited and also numerous articles manufactured therefrom. The Professor also exhibited with much pride, two grand prize medals awarded at the International Expositions held at Paris, for the marvelous resemblance of the metal to gold, and also for its lasting brilliancy. The interview resulted in our giving an order for cases to be made from his **Aluminum Gold**. We have them made both in round and mansard style and they are elegantly engraved or engine turned, and are unsurpassed in beauty of workmanship. The Watches are manufactured of the best material, and finished by skilled hand labor, and are only equalled by watches costing ten times as much. They are perfect time-keepers and fully guaranteed, and that they are in every respect as represented, the thousands of testimonials received from our customers amply attest. Price of Sample Watch by Registered mail, **\$15.00**. We will send the above watch to any person who orders with the intention of acting as agent, or who will recommend it to his friends, on receipt of **Ten Dollars**.

Gents:—The Aluminum Gold Watch I purchased from your firm three months ago retains its color as brilliant as when first received. I delayed sending my second order because I wished to test the metal. I can now conscientiously recommend them. I enclose \$10.00 for one more Aluminum Gold Watch, same as the first. M.M. Watts, Hawthorn, Fla., Nov. 2d, 1881.

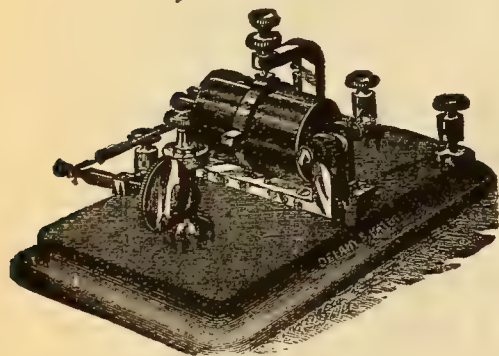
Gents:—The second lot of \$10.00 Aluminum Gold Watches received all right. I enclose Money Order for five Stem Wind Aluminum Gold Watches, and other watches and goods from your Catalogue. Forward at once and oblige, George P. Wilson, Grand Forks, Dakota, Oct., 30th 1881.

Gentlemen:—The Aluminum Gold Stem Wind Watch I purchased from your firm is as good a time-keeper as I ever saw on account, the balance can be paid at the Express Office when the watch is delivered. Let us hear from you with an order. C. A. Walker, Eastman, Ga., September 18th, 1881.

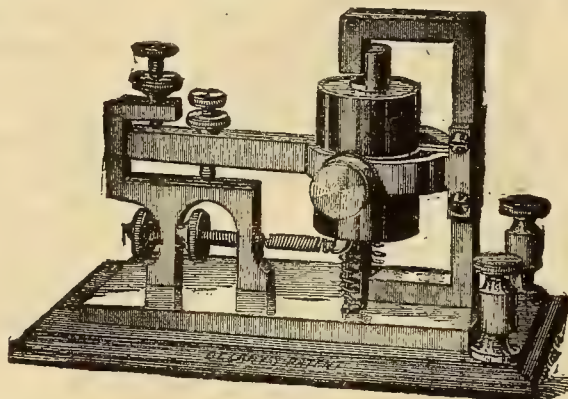
Gents:—I sold the Aluminum Gold Watch for \$65.00. I enclose the money for another watch. Yours, Respectfully, T. D. Cooley, Dealer in General Merchandise, Williamstown, S. C. March 9th, 1881. Send money by Post Office Money Order, or Registered Letter. We will send the watch C. O. D. if Two Dollars is sent.

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SOUNDER.

The above cuts illustrate the Delany Patent Telegraph Relay and Sounder, now being manufactured and tested with a view to their general introduction on all Telegraph Lines liable to be affected by the Page Patent. These instruments are in all respects superior to any now in use.

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**The Tonic Extract of Wheat** improves weak digestion, cures sleeplessness, nervousness, constipation, loss of appetite and power. Especially adapted to repair brain waste from study, care or grief. Prevents and cures Bright's disease, diabetes, uterine weaknesses, rheumatism, neuralgia and all malarial diseases. Strengthens to overcome evil habits. Adapted for table use. \$1 each, or six bottles for \$5. Sample bottle 50c.

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**The Life Food** is to be taken between meals to relieve sense of "goneness." Never failing remedy for the alcohol, opium and tobacco habit, and for insanity and cancer in their early stages. \$1.50 each, or 6 bottles for \$7.50. Sample bottle 75c.

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The discovery of the insulating compound, known as Kerite, is the result of more than ten years of uninterrupted experiment and application, as well as twenty years' previous experiment and experience in the manufacture of India-rubber. About ten years of this time was spent in assisting Mr. Charles Goodyear in the experimental department, while perfecting his improvement in vulcanized India-rubber and its varied applications.

The necessities of the telegraph business requiring an indestructible insulation, stimulated me to the discovery and perfecting of my compound known as Kerite, which combines the great advantage of durability with perfect insulation.

Kerite insulation is proof against the action of the corrosive elements in the earth, air and water; and, where it has been practically tested, has proved its superiority to all other insulation.

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It is not injuriously affected by the extremes of heat and cold, experienced in our climate, nor by length of exposure in the atmosphere.

It will endure long-continued heat below two hundred degs. Fahrenheit, while for short intervals it may be subjected to from two hundred and fifty to three hundred degs.; and it may be safely immersed in boiling water.

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There are thousands of miles in use throughout the country, by Fire Alarm and other Telegraph Companies of all our principal cities.

It has been used largely in the city of New York, under all conditions and exposures for the last nine years.

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commend and recognize the Kerite insulation as superior to all others.

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Indeed, an examination will demonstrate that the edition of "Christmas Evergreens" for this year compares very favorably with any of the ordinary three, four, or even five dollar holiday books, either as to contents, illustrations, typographical appearance, paper, printing or binding.

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For the last four years we have prepared each year New Year's Cards for telegraphers. Our object has been to give the fraternity a distinctively telegraphic New Year's Card, one that was neat, pretty, appropriate; different from any other New Year's Card, and so unique and handsome as to attract attention and deserve preservation. Our success has been much greater than we could have expected, and this year we have, in addition to those for telegraphers, also one for telephone men.

### PRICE LIST.

25 cards, with one name, mailed to any address on receipt of	\$ 35
50 cards, with one name, " " " " " "	50
25 cards, without name, " " " " " "	25
125 cards, without name, " " " " " "	1.00

Cards furnished by the thousand at special rates.

There will be no delay in filling orders. The cards will be mailed in each case as soon after receipt of the order as it is possible to have the name printed. Order early. U. S. postage stamps taken. Samples of either the Telegraph or Telephone Card mailed on receipt of 2c. stamp. Samples of New Year's Cards and messengers' addresses on receipt of 3c. stamp.

25 New Year's Cards, with name, or 25 Messenger Addresses, will be mailed free to any one sending us two yearly subscriptions for THE OPERATOR. Their own and that of a friend will do.

## Telegraph Messengers' Christmas and New Year's Greeting, 1881-82.

These addresses can be used either at Christmas or on New Year's day, as the messengers many prefer. They are suitable for the messengers of ANY telegraph company. They are for presentation to patrons of the telegraph, merchants and others; and messengers will find them neater and handsomer than anything of the kind heretofore used for this purpose, and cheaper than they could possibly get them printed for in their own towns.

### PRICE:

25 Copies, postage prepaid, only	\$0.35
50 Copies, " " " "	0.60
100 Copies, " " " "	1.00
250 Copies, " " " "	2.25
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1,000 Copies, " " " "	7.00

Order early; U. S. postage stamps taken. Samples mailed on receipt [of a 2c. postage stamp. Sample of both the Messengers' Address and of the New Year's Cards will be mailed on receipt of a 3c. stamp.

Messengers are recommended to order a supply of our Telegraphers' New Year's Visiting Cards, with their name printed on them, to be presented in connection with the Messengers' Address. We will send 25 addresses and 25 cards on receipt of 60c; 50 addresses and 50 cards on receipt of \$1.00, or 125 addresses and 125 cards on receipt of \$2.00.

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**A SPLENDID BREECH LOADING SPRINGFIELD RIFLE** FOR ONLY \$7.50.  
MADE BY PARKER SNOW & CO  
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WEIGHT 8 lbs  
LENGTH OF BARREL 32 INCHES  
**ONLY \$7.50**  
SIGHTED FOR 600 YARDS WILL CARRY 1,000 YARDS.

**Nº 1 BREECH OPEN** **Nº 2 BREECH CLOSED**

### A BRAND NEW RIFLE FOR \$7.50

We have recently purchased the entire stock, and have obtained sole control of one of the cheapest and best Rifles ever made for the money, as shown in the above illustration, and in order to rapidly introduce them into the United States and Canada, we have concluded to sell a limited number at **ONLY \$7.50**. There are few rifles in the world that can do more effective work than this reliable weapon, and its death dealing qualities are unsurpassed by few if any rifles made. It will carry 1000 yards. The breech is constructed upon a superior plan, is perfectly safe, and fitted with an AUTOMATIC CARTRIDGE EJECTOR; and it has been fired 45 times in one minute. In order to protect ourselves against dealers ordering by the hundred, at the price named, we shall insert this advertisement but one time in this paper, so you should immediately CUT THIS ADVERTISEMENT out and forward it to us with your order. We alone control this Rifle, you cannot purchase them of any other dealer, and it must not be confounded with any cheap Rifle now advertised. We are a firm of REGULAR GUN DEALERS, well known throughout the country and mean exactly what we say. Cut No. 1 shows the open breech; and No. 2, the breech closed. This is not a second-hand Rifle, but it is brand new and thoroughly tested. The regular cost price for manufacturing these Rifles is \$12.50, and has been regularly sold at \$17.00; indeed, we are prepared to prove, that at one time \$16. EACH WAS OFFERED FOR A 10,000 LOT OF THESE RIFLES, and the offer was refused. Remember, though you may not want this Rifle for your own use to-day, you may need one at a future date, but you must order now or never, for this offer will not hold good after March 31st, 1882. REMEMBER, this is a SPECIAL OFFER, and to secure one of these Rifles you must send us this advertisement and \$7.50. Two sent for \$14, four sent for \$25, six sent for \$33. Speculators should order immediately. In each case this advertisement must accompany the order, but we cannot send more than six Rifles, at the price named, to any one address. You can sell these Rifles readily at \$10 to \$20 each. IN EVERY CASE should you not be satisfied with your purchase, WE WILL REFUND THE MONEY. Should you desire it we will send you the Rifle for inspection, by express, allowing you to examine it at the Express Office, and accept or refuse it, upon receipt of \$2, to guarantee us against loss of express charges. If you accept the Rifle, this will leave you but \$5.50 to pay. Remember this is not a toy Rifle, not a catchpenny, but a regular long range Rifle, good for small game, deer, buffaloes, wild geese, bears, or burglars, road agents and Indians. When you send the full amount of \$7.50, with your order, we will send you a box of 40 ball cartridges free. The cartridges cost 50c. per box of 20, and can be purchased of us or ordered of any dealer. A steel cleaning rod accompanies each Rifle, and we guarantee the Rifle to be safe, accurate, strong, and reliable. Upon receipt of \$1 extra we will send a handsome double leather cartridge belt, with neck and waist strap (usually retailed at \$2.50). Order immediately. Handsome catalogue of good, cheap guns, rifles, and revolvers sent free. Send money by money order, registered letter, or draft, at our risk. Reference we refer to Agents of Adams Express Co., American Express Co., United States Express Co., National Express Co., or any bank or business house in this City.

Address **SAXON IMPORTING CO., 116 Chambers St., New York.**

N. B.—We have a job lot of new Remington Rifles and Spencer nine-shot Magazine Carbine Rifles, and will dispose of them at the following prices: a Remington Breechloading, brand new Rifle sent for \$12; or a Spencer Magazine nine-shot Carbine Rifle, sighted for 900 yards, for \$12. Only a limited number on hand. Order early.

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**AN ELEGANT GIFT**

What makes a more Beautiful Gift than a **SPARKLING DIAMOND**? We can think of nothing, and with this idea in mind, we have during the dull months of the past season, employed our Diamond Setters in making up a line of **SOLID GOLD JEWELRY**, and using our justly celebrated **French Diamonds** as settings. If you desire a beautiful ornament for yourself or wish to make a handsome present to some friend, now is your chance to procure a limited number of the articles illustrated in this advertisement at a **VERY NOMINAL PRICE**.

**DESCRIPTION OF ARTICLES**—No. 1, a Solid Gold Ring, solitaire, French Diamond. No. 2, a Solid Gold Ring, seven French Diamonds. No. 3, a Solid Gold Ring, three French Diamonds. No. 4, a Solid Gold Ring, five French Diamonds. No. 5, a Solid Gold Ring, three French Diamonds. No. 6, a Gent's Scarf Pin, one French Diamond, Solid Gold setting (we show in illustration but about 14 the length of the Pin. No. 8, a Gentleman's Shirt Stud, Solid Gold setting and spiral, single French Diamond. No. 7, a Pair of Ear Drops, French Diamonds, Solid Gold setting and wires. **Remember, all the above described goods are SOLID GOLD.** We wish to caution you against the many firms who are advertising cheap and worthless jewelry. Our goods are just as represented and if you are dissatisfied after receiving anything we advertise your money will be refunded. Our prices for the above described articles, shipping charges prepaid, to any address in the United States, until March 31st, 1882, will be as follows: (provided, however, that when you order you will cut out this advertisement and enclose with the money you send us) We will send either No. 1, 6, or 7, upon receipt of \$1.65; or, upon receipt of \$2.15, we will send either No. 3, 5, or 7; or, upon receipt of \$2.60, we will send No. 4; or, upon receipt of \$2.55, we will send No. 2. Our object in offering a few styles of our Solid Gold Jewelry at the above nominal prices, is to secure permanent customers for our other goods. We can only send a limited number of these goods at the prices named, and to protect ourselves against jewelers and others ordering in quantities, we will insert this advertisement but one time in this paper, hence, require you to cut it out and send to us, with your order, that we may know you are entitled to the benefit of this offer. Remember, we will not send more than two articles for each advertisement sent us. You can make a selection of any one or two articles, and order them at above price, but should you wish to purchase more, we will furnish them at prices given in our catalogue which we will mail you at the time we forward your goods. We could never make the above offer unless we felt sure that you would be so highly pleased with our goods, that you will not only become a regular customer yourself, but will influence your friends to purchase from us by showing the beautiful jewelry we send you, at the same time exhibiting our catalogue to them, and in looking it over, we know by experience, ten chances to one they will find something they want. The French Diamonds we use as settings in our Solid Gold Jewelry are of our own importations, they are cut from the whitest stone, and exact proportions as the natural gem; they are very brilliant, and in fact we defy any one to detect them from the real Diamond. If you order a ring we will handsomely engrave any initial, name, motto or sentiment on the inside without extra charge. To ascertain the size ring you wear, cut a slip of paper so as to just meet around your finger and send to us, always state in your order what engraving you wish. Cut this advertisement out and send to us before March 31st, 1882, as it will not appear again. Send money by registered letter, money order, or draft. Postage Stamps taken. As to our reliability we are well known throughout the U. S. or you can write to any Bank or Express Co., or have your friends call at our elegant salerooms in this City.

**G. W. PETTIBONE & CO., No. 25 Maiden Lane, New York City.**

**READ**

**Nº 3**



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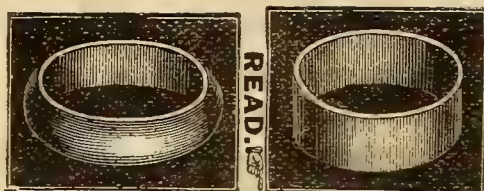
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**Our Future Sales is our Profit!**  
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We can only send out a limited number of rings at price named, and to protect ourselves from jewelers and dealers ordering in quantities, we will insert this advertisement but one time in this paper, hence require you to cut it out and send to us, so that we may know you are entitled to the benefit of this offer. Under no circumstances will we send more than one ring of each kind to any person sending us 75 cents each, and this advertisement; but after you order, and other rings are desired, we will furnish 18 K. Solid Gold Rings at prices given in our Illustrated Catalogue, varying from \$3.75 to \$9.00 each. If you wish one ring send this advertisement and 75 cents; if you desire two rings send \$1.50 and this advertisement; or if you wish three rings send this advertisement and \$2.25; if more than three are desired you must pay full price as given in our catalogue. To ascertain the size ring you wear, take a piece of paper and cut it so that it will just meet around the finger you wish to wear the ring on, send the slip to us, and we will send



a ring to fit you. State which you want, the Band, Half Round, or Stone Ring, if you order a stoning, state which you want, Amethyst, Topaz or Garnet, and also state what you wish engraved on the inside. Cut this Advertisement out and send to us, before APRIL 30th, 1882. Postage stamps received same as cash. You can send small amounts at our risk, or send by money order or registered letter.

STONE RING,

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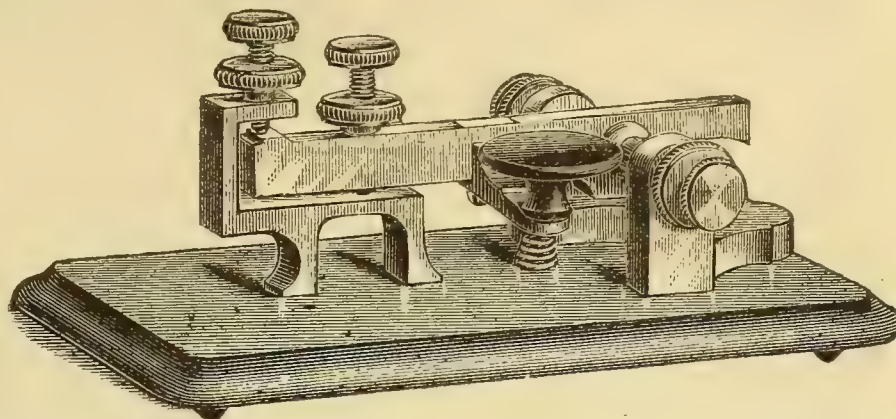
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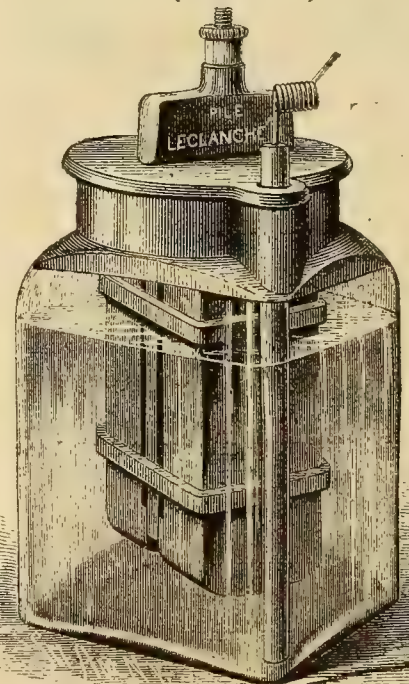
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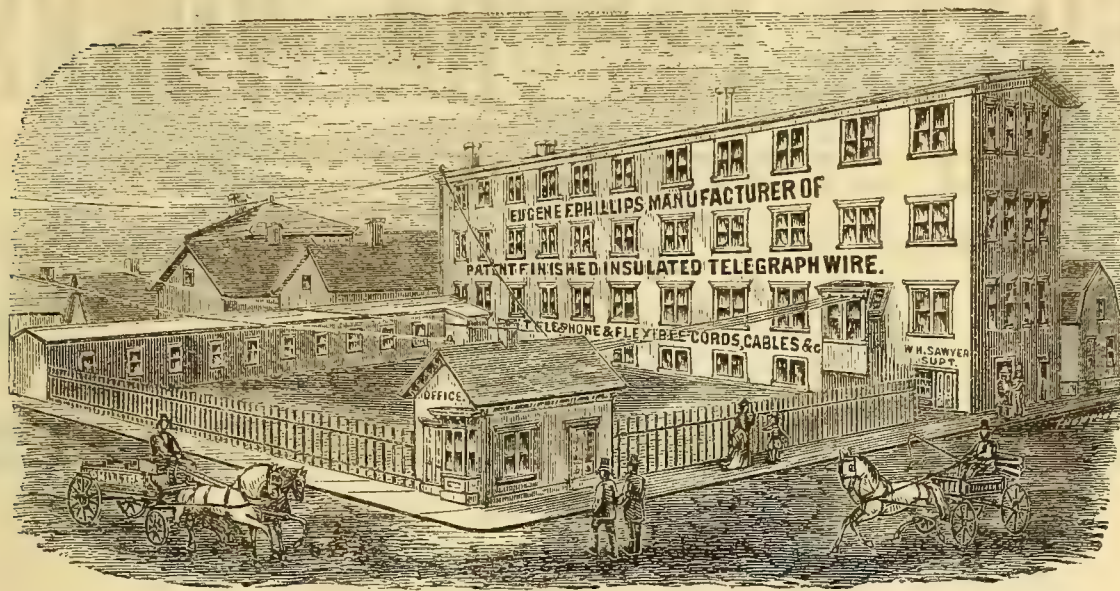
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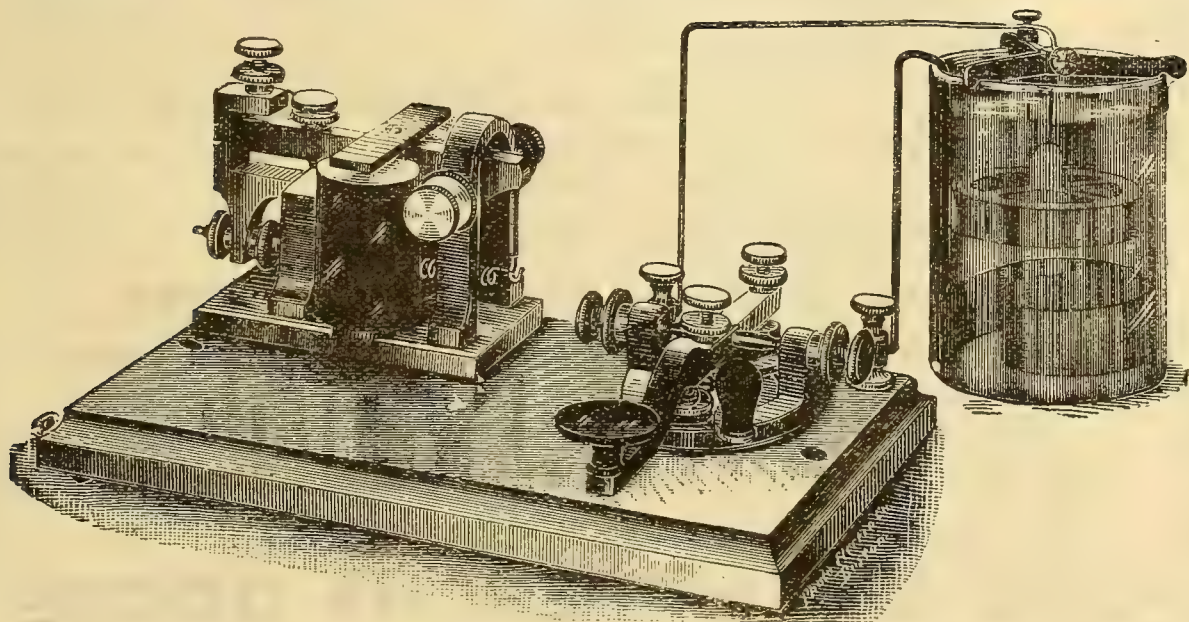
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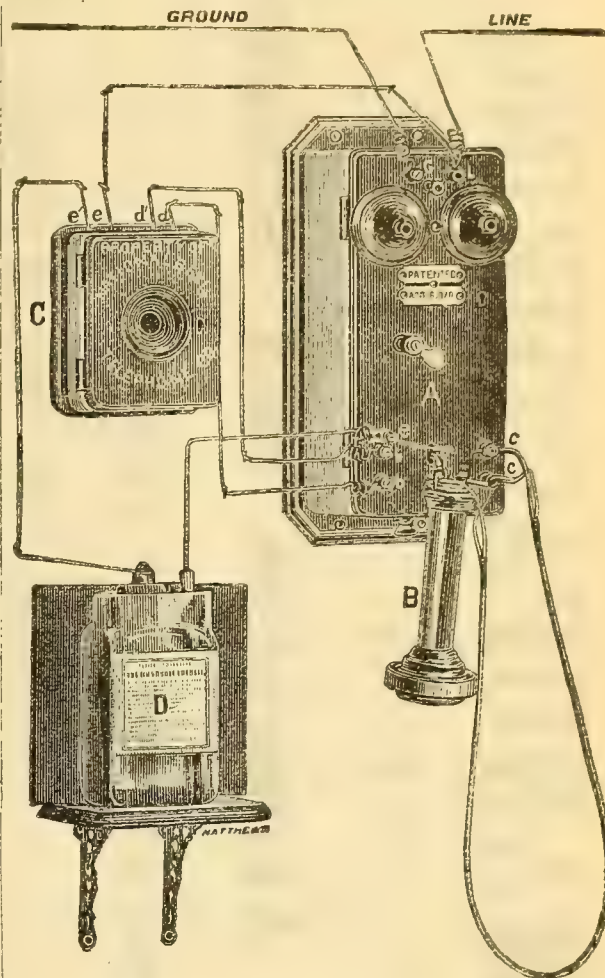
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ALEX. H. RICE, Mayor of Boston [1856].

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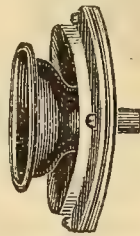
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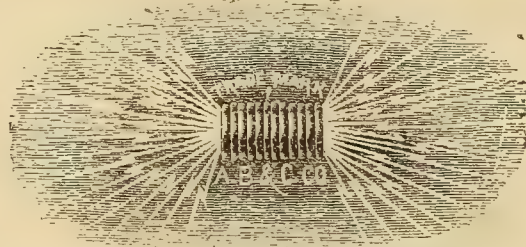
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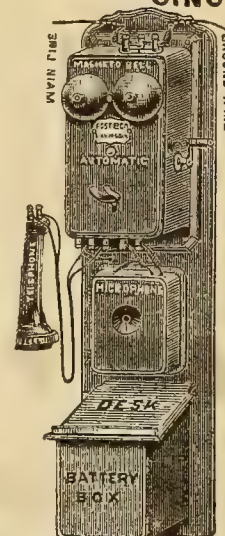
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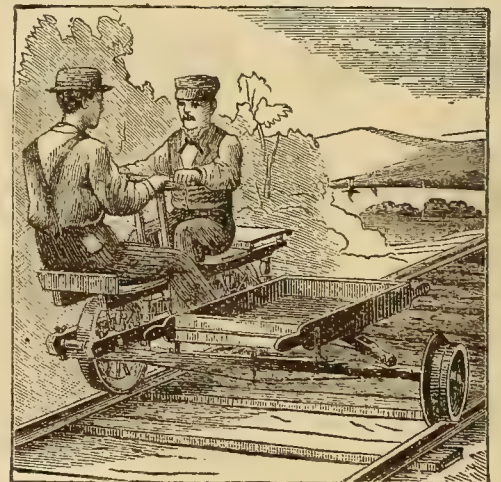
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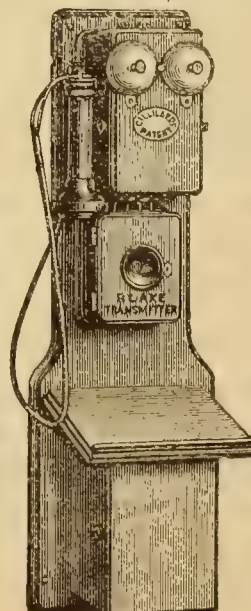
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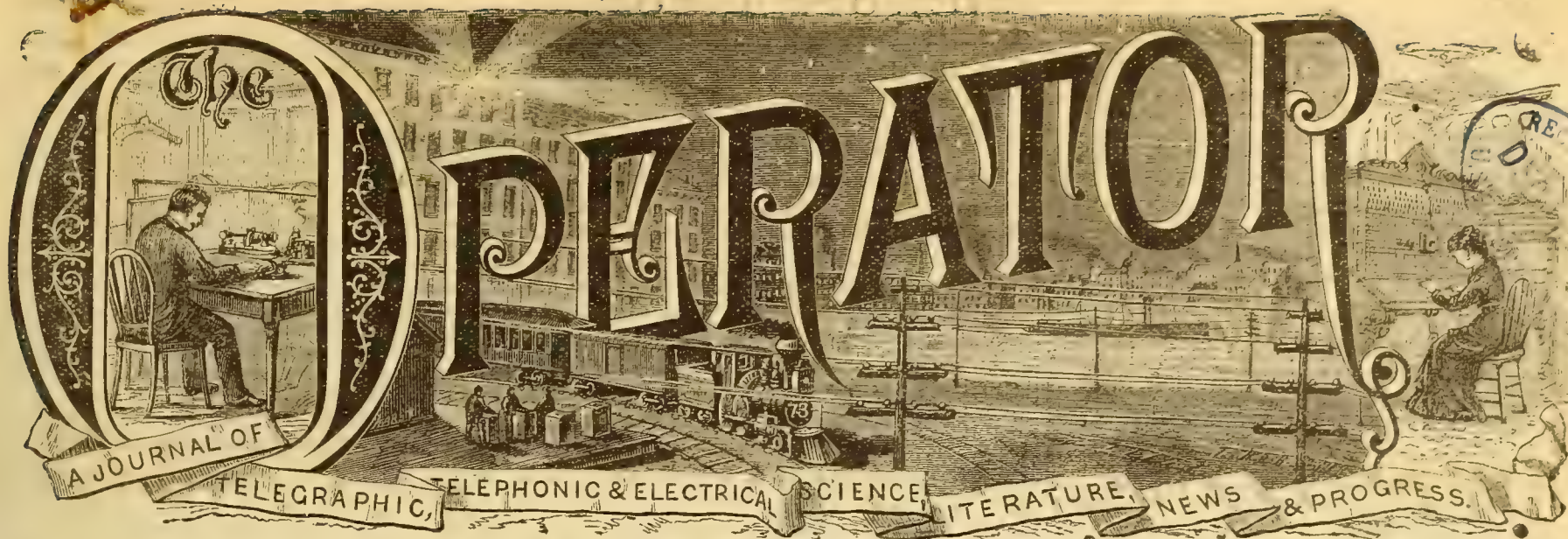
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And his respectfully referred!

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With unmolested din,  
But on the busy long-way wire  
Thou eternally chippiest in!

Break! break! break!

On the busiest wire, oh! Plug,  
And perhaps I may have revenge some day,  
And batter thine ugly mug.

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### The Paris Electrical Exhibition Closed.

[From the Special Correspondent of The Operator.]

Contrary to the published notices, the closing of the Electrical Exhibition was postponed until Sunday evening, Nov. 20. The extra five days were devoted to charitable ends. The receipts of the 16th and 17th were distributed among the police forces, French and foreign, who have been employed in the building in the various sections; those of the 18th are to the poor of Paris, while on the 19th and 20th the gates were thrown open to the public without charge. Two nights were also reserved in the telephone rooms for persons who had not heard the opera through their medium and were willing to pay for the privilege at the rate of five francs for five minutes. These telephonic experiments have contributed greatly to the success of the exhibition, and it has been noticeable throughout that the crowd was always largest on opera nights. The many projected electrical shows that we begin to hear of will do well to copy this feature. M. Adet, whose system is used, received a *diplome d'honneur*.

The postponement of the closing met with much opposition from the exhibitors in different sections, and nearly all protested against it, claiming that if the administration wished to make a charitable affair of it they should do so at their own expense, and devote the five days between the 10th and 15th to it. The authorities replied that, inasmuch as the opening had been delayed eleven days on account of the exhibitors not being ready with their goods, they should not object to returning the compliment by remaining five days over time.

I should think that the few Americans who are represented here would have cause to be well satisfied with the results obtained. The Brush, Weston and Maxim electric light people have sold their rights; the Edison folks are now looking for a site to build a factory, and are going into the manufacture of lamps and machinery on a large scale. Mr. Chas. Batchelor will have the management, and nearly all of those who are connected with him here who came from Menlo Park will remain in Europe. The Dolbear telephone has been taken by some private parties who are now organizing a company to introduce it in Europe. Mr. Albert Stetson and Mr. Buck remain as Professor Dolbear's representatives. Gray's Harmonic system has been disposed of to a syndicate who have obtained the European rights, and will commence its exploitation as soon as new instruments arrive from America. Mr. F. W. Cushing remains in Europe in connection with it. Connolly Bros. & McTighe's Automatic Telephone Exchange has been sold, and the Messrs. Connolly will attend personally to its introduction. A company has been formed to exploit the Dion bobbin, which I have already described, and others take the Pond indicator and photo-relievo systems, which latter was improved by Edison, and even the switch-board exhibited by the Western Electric Manufacturing Company, as part of their telephone exchange system, is about being sold to the telephone people here. It is unfortunate that American instrument makers did not take the trouble of showing their goods. There have been almost numberless inquiries for prices and information concerning the very few instruments that have been shown as part of some system, and much surprise has been manifested at the absence of such articles. Our American instruments are much neater and simpler than those of European manufacture and are considerably cheaper. Mr. Gilliland, formerly of Indianapolis, is now in Europe looking for a site for a factory, and will probably decide upon Antwerp as the most eligible spot. He represents the Consolidated Western Manufacturing Company.

Professor Bell's induction balance and first telephone have just arrived and been placed on exhibition. They could only be shown for five days, when the closing of the exhibition necessitated their being repacked and carried away. Professor Bell has another means for locating a bullet in the body. He places a steel plate somewhere on the body and connects a steel probing rod with it through a telephone. When the rod is passed into the wound and touches the lead ball the two metals—of the lead inside and the steel plate outside—form a battery of which the body is the cell, and a sound is heard in the telephone. No sound is heard until the probing rod touches some foreign metal, for the rod itself, being steel, cannot form a battery with the same metal outside of the body. When the Professor was asked why the mistake had been made in the President's body, he said that no mistake had been made, that they had actually located metal, but that it happened to be a steel bed spring in the mattress.

The American exhibitors have clubbed together and presented Mr. Philip Walker, the

Secretary of the United States Commissioner, with a diamond stud, in recognition of his services and gentlemanly attention to their needs, especially during the first days of the exhibition. Mr. Walker has proven himself well worthy of his position, and has in many instances put himself to much personal inconvenience to help others along. This gentleman will be remembered by many telephone men in Boston, where he was formerly employed.

### Telegraphic Colleges.

TWENTY-ONE DOLLARS' WORTH OF FREE ADVERTISING CHEERFULLY GIVEN.

The following extracts from a circular issued by the "Union Electric Telegraph Instruction Company of California," San Francisco, are decidedly creditable to the college brigade:

"Their line is gone through all the earth, and their words to the end of the world."—*Psalm xix*, 4. \* \* The rapid development of the electric telegraph, by the construction of railroads and competing lines, is opening more profitable positions to young men and ladies than any other branch of business in the world. \* \* The salaries paid operators are \$50 to \$60 per month for small stations, \$65 to \$75 for medium stations, and \$80, \$90, \$100 and \$115 for large offices. The hours for attendance in office are eight to ten hours per day. \* \* \*

There is no profession so quickly learned that pays so large a salary as telegraphy. Think of it. There is no profession in which the work is as light or the hours of labor so few as telegraphy.

If all their work could be done at once the operators could finish what they generally have to do each day in two hours; but, as it comes scattered through the whole day, they hardly realize that they have done any work. It is almost like being paid for sitting in a pleasant office and studying or reading. \* \* \* The time required for learning should not exceed fifteen weeks, but, by constant and diligent application, it can be learned by some in less time. \* \* \*

*Superintendents favor our graduates.* \* \* \* We can assure those that engage with us that we apprehend no difficulty in their obtaining suitable positions as soon as qualified. \* \* \* A certificate will be given to each competent graduate which will be, with our personal assistance and influence, a sufficient recommendation to obtain employment as an operator. \* \* \* The business in itself is fascinating in the extreme. The idea of communicating instantaneously a distance of thousands of miles *never loses its charm*. \* \* \*

The study and practice of telegraphy is not tedious, but, on the contrary, to those having leisure hours it would serve as a pastime rather than a task. \* \* \*

LIST OF OFFICES ON THE COMPANY'S PRACTICE CIRCUIT.

S.F.—Main Office, San Francisco, Cal.  
O.G.—Ogden, Utah. S.A.—Sacramento, Cal.  
C.H.—Chicago, Ill. A.G.—Los Angeles, Cal.



B.—Baltimore, Md. O.D.—Oakland, Cal.  
 P.—Philadelphia, Pa. S.C.—Santa Cruz, Cal.  
 H. B.—Harrisburg, Pa. P.O.—Portland, Or.  
 W.—Washington, D. C. S.E.—Seattle, W. T.  
 S.O.—St. Louis, Mo. V.C.—Victoria, B. C.  
 V.—Virginia City, Nev. N.—Boston, Mass.

The following is an advertisement clipped from the Nashville *American* of Oct. 26, the signature being particularly commended to the attention of General Eckert:

**THE UNDERSIGNED, FEELING THE** want of a practical school of Telegraphy, upon which Telegraph and Railroad Companies can depend for competent and reliable operators, has concluded to open a school in which shall be taught all the requirements necessary to fit a person for practical service. \* \* Under the charge of the undersigned, and the two last will be taught by Mr. Jo W. Fisher.

Applications for terms as pupils should be made to the undersigned, in the handwriting of the applicant, and will not be considered unless accompanied by testimonials from responsible parties as to the intelligence and good habits of the applicant.

School hours—7 to 9 p. m.

The standing of the undersigned can be ascertained from any of the Telegraph offices in Tennessee or Kentucky.

J. B. TREE,  
 Western Union Telegraph Office,  
 Nashville, Tenn.

We also commend "Professor" E. I. Wilson, of Atlanta, Georgia, to the attention of General Eckert. The "Professor" advertises "Wilson's Southern Telegraphic College," and, in the *Georgia State Gazetteer*, informs the world that he is "a practical operator of 25 years' experience, and is now in the employ of the Western Union Telegraph Company, as a receiver of daily Press Reports, at a large salary." This particular telegraphic corpse deliberately lies when he says, "We are in receipt of letters almost daily calling for operators in the West, and also in our own immediate vicinity."

"The Oberlin Telegraph Company," at Oberlin, O., offers to teach students for forty-five dollars, and to board each student for "the first month free of charge," and will "make a written contract with you, in which we will bind our company to procure for you a situation as operator on the completion of your studies, at a salary not less than forty dollars per month."

The "colleges" in St. Louis seem to be particularly well sustained by the officers of the Western Union Telegraph Company, another fact which we commend to the attention of Gen. Eckert. Our St. Louis correspondent writes: The most prominent of these 'colleges' is on the second floor of the Western Union building, and is under the immediate supervision of Professor Prescott (brother of the ex-Electrician-in-Chief). The room, battery and instruments are furnished by the Western Union Telegraph Co., or rather by the management at this place, and, of course, with the full knowledge of Supt. Baker.

"Manager Brown takes especial delight in this department, and has actually extended to some of the lady operators (who handled from 200 to 250 messages per day) the privilege of practicing in the plug factory, after office hours, so that they may become expert and in the near future receive an increase of salary, but Chief Operator Topliff, ON PRINCIPLE, holds most of said ladies salary down to \$30 with a tenacity that is truly wonderful.

"FOUR dollars per month is charged for tuition in the 'factory,' and the number of students is 32. What salary Mr. Prescott receives or how the spoils are divided I am unable to say, but about \$120 per month is divided in some way. Whether or not the Western Union Company receives anything for room, fire, gas and battery power is an open question among the uninitiated.

"The next college on the list is 'The Metropolitan Commercial College,' the electrical department of which is presided over by Sid. Fairchild, night wire chief. I am not informed as to the number he instructs, but understand it is quite considerable. Sid. is the only assistant night chief who is granted immunity from extra work during the day, and the natural inference is that he has the sympathy of the management in his endeavors to turn out a few strictly first-class operators who are willing to work for \$30 per month."

One of the New Orleans operators says the reason he got "Mrs. Morris, care H. Low, 237 Olive street, for Mrs. Morris Carey, No. 1, 237 Olive street," was on account of induction on the Galveston circuit.

### Some Electrical Troubles to be Expected in Telephone Exchanges, and How to Remove Them.

The recipe given by Mrs. Glass for the proper method of cooking a hare, commenced, as is well known in modern history, with the immortal sentence, "First catch your hare."

These words, slightly modified, should be embroidered in letters of gold upon the cardinal red lining of every inspector's hat. They should there be made to read, "First catch your fault." All telegraphic, telephonic or other systems of electrical communication will, in the nature of things, develop faults and defects in working, irrespective of the care or expense involved in construction.

Not all such organizations, however, are brought into such intimate relations with the general public as the telephone exchanges.

Even the gold and stock printing and the district telegraph systems can bear no comparison with the telephone exchange in this particular, because the former deals exclusively with a class of intelligent business men, who are acquainted with the propensity of all machinery to get out of order, and realize that if an instrument is intended to accomplish an ingenious result, it will probably be sufficiently intricate to possess machinery requiring care and attention.

Moreover, the very complication of the stock printer has frequently frightened away from it the meddling amateur, who works so much woe to the Blake transmitter and the magneto bell. It is also evident that the limited use of the stock printer calls for the employment of a smaller number of inspectors, and consequently a much stricter watch can be maintained over them, and a higher class of inspector be readily maintained, while a sufficient number can be always provided to exercise a careful supervision over each individual instrument.

Or, take the case of the District telegraph instrument. It is true that its numbers are legion, but its scope is limited and its use correspondingly so. As it can do but little, its internal arrangements are of the simplest character, amounting only, ordinarily, to a circuit breaker, which may be rotated once, twice or thrice, according to the required signal. Any trouble affecting this instrument, or the circuits employed in connection therewith, can be readily localized and removed by almost any intelligent person understanding the system.

But the telephone is not in every case subjected to the rules we have been brought up in. A heavy escape that will completely incapacitate a line of printers will scarcely affect the magneto bell, and will actually improve the operation of a set of telephones.

In the operation of a telephone exchange, we hear all kinds of voices—the hoarse, gruff voice of the warehouseman; the sharp, imperative baritone of the merchant; the incisive clearness of the lawyer; the dulcet, feminine voice of the young lady at home; and the Bowery slang of the office boy.

All these voices have corresponding pairs of hands and curious eyes attached to their organizations; and all the owners of these same attachments have a vivid consciousness that by turning a screw like this and pressing a spring like that they can materially improve the working of a telephone.

Not the least, by a geographical league, of the troubles that beset the path to glory, as daily trodden by the telephone inspector, is that thorn in his flesh—the amateur electrician—and any patent covering a feasible method for his extermination would prove as valuable as the celebrated Page patent or the Simpson gutta-percha monopoly.

In responding to a complaint of defective service, therefore, the inspector must never be oblivious of the fact that the trouble may be caused by the subscriber himself and must, while not forgetting his courteousness, be prepared to take steps to prevent the recurrence of the trouble.

It is not always easy to decide from the nature

of a complaint what the character of the defect is. It is usually the same thing to the subscriber. It is only when the defect is well defined that he gives any guide in his complaint. It should, however, be the aim of both office manager and inspector to forestall complaints as much as possible, and, to that end, the most complete harmony should be maintained between the two departments. It would, to me, were I a telephone superintendent, be a sufficient cause for removal of either the office manager or the inspector, as the necessities of the case might warrant, to another sphere of action, did I find any inharmonious relations existing between them. We will now imagine an every day case in a telephone exchange.

Excited subscriber comes in, saying "What's the matter? I have been ringing this hour, and can't get an answer."

That's the idea. The subscriber has given the cue in his first three words. "What's the matter?" All we have to do is to go ahead and find out, remove the trouble and report.

A small percentage of men will do these things in the proper order; a little larger percentage will do them, only putting the first last, and the remainder will omit the first item altogether.

"Well," I hear some one say, "it's easy enough to talk; but what would you do in the premises?" I would, first of all, if I were an inspector who had no previous electrical experience, find out just how certain troubles would affect the instruments; but in the present case it is evident that the first thing to do is to find out what the defect is.

1. Ask the office operator to ring up the complaining person and await results.

She may say, "He doesn't answer."

Very well; but if the office annunciator armature vibrated you have, at least, ascertained that the line is not broken. If, on the contrary, no result was apparent at the central office when the call was made, it is equally evident that the line is open somewhere. Or, in the third place, the call may have succeeded and the subscriber responded by telephone.

Take the first case. The subscriber doesn't answer, but the armature operated by the calling current vibrates. The signal may have been given at the subscriber's office, but no one was there to answer it; or an escape may be on the line between, or a ground or cross may be similarly located. We may safely conclude, in this case, seeing that our result corresponds with the subscriber's report, that the first idea may be neglected and we can proceed upon the hypothesis that a ground, cross or escape is somewhere on the circuit, either in the central office, on the line, or in the subscriber's office.

Going now to the subscriber's office, the inspector may take a look over the apparatus. He may perhaps find, as I once did in a hardware store, a crow-bar leaning against a line binding post and the steam heater. If he does, on removing it, he will probably find the trouble removed also.

More likely, however, he will see nothing amiss, and upon turning his crank, if the bell is a crank magneto, will find that it rings all right but that no response is made. Let him then disconnect the line wire as it enters the building. This done, if the bell will not ring, the trouble is outside. If, on the contrary, the bell does still ring the trouble is a ground and is on the subscriber's premises, and must be sought for there until found and removed.

A careful search will generally reveal it, but if it is difficult, the wire may be severed again, about half way between the former break and the instrument, and the ringing test once more applied. When the defect is found, the breaks must be carefully repaired.

If the trouble was ascertained to be outside and there is but one subscriber on a line the inspector can now return to the office and proceed to the cupola or other entering point. He may disconnect the offending wire there and ascertain if that opens the wire to the switch-board.

If the wires have been properly run inside they will probably be clear, but I have known copper joints made in a hurry and carelessly wrapped, come together behind a switch and ground lines. But we find that the drop armature no longer vibrates, and we have, therefore, ascertained the trouble to be on the line wire between the central office and the subscriber's office. The case may now be turned over to a lineman, who only has to go over the line. In



case more stations are on the line operations are, of course, much simplified, as it can be ascertained between which two stations the trouble is in the same way. No. 3 cannot get central office. You open at No. 2. and No. 3 can still ring his bell ground between No. 2 and 3.

Take, now, the second case. Complaint was: "Can't raise central office." Operator there tried to call subscriber, but tried in vain. The armature of the central office drop does not even move. All nature unites in telling you that the line is either open or has a very high resistance in it, such as a loose connection.

As in the previous case, the defect may be either at the central or sub-station or on the line. You are at the central office; there is only one station on the line, and that is half a mile away, so it is evident that in this case charity begins at home and you test the central office part of the line first. If you have a spare battery, say of four or five cells, it is a good plan to disconnect the end of the line from the ground plate and connect it with this spare battery, connecting the other pole of the battery to a ground wire. You will thus have a steady battery on your line and avoid troubling the operator. Supposing, however, that you have no such battery. Connect the wire just where it leaves the building to a ground wire and see whether, upon sending a call, the armature now vibrates. If it does, all right; the break is outside. This test can be performed without the assistance of the operator, by inserting a magneto bell between the office wire and the ground wire. It is a good plan to keep a bell in the cupola always for such work.

If, upon grounding, the bell does not work, the trouble is in the office, and can be found by inspection, aided by the application of the ground wire, as before. If the bell does work, the trouble is outside; and if but one station to the line, the inspector proceeds thither, and carefully examines every line connection, screw-post down to the ground wire. He may find a loose screw-post, a wire broken by carpenters, or a missing gas meter. If so, all there is to do is to fix it in good shape; and be sure either that the ground is made on the water pipe or that the meter is bridged by a stout wire.

If everything appears to be all right, he will ground close to where the wire enters, and try the bell, proceeding just as at the central office. If the bell rings, fault is outside; if it does not, trouble is inside, and must be found by continued inspection and grounding. If proved that the trouble is outside, and there is only one station on the line, report to lineman line open. If other stations are on the line, proceed as before, and when the break is thus localized between two stations, a temporary ground wire is put on, so that as many stations as possible may be grounded in.

Take next the third case. The call made by the central office operator was heard by the subscriber, and responded to by telephone. What now do the circumstances indicate? First, that the central office signals reach the subscriber, though those of the latter do not reach the central office; secondly, that telephonic conversation is practicable in both directions.

This, then, proves that the line is not broken nor heavily grounded or crossed, and also that the talking circuit is complete at the subscriber's office; and the cause of trouble is probably located either in the annunciator at the central office or in the calling apparatus of the subscriber. I say *probably*, because it is quite within the bounds of possibility that when the subscriber is now called upon to try and signal the office, he finds he can do it all right—the trouble was transient, and was produced by lineman drawing wires over or temporarily disarranging the wires.

The subscriber is requested to try to call the office, but no drop falls. The drop is examined and may be found to have a wire-edge on the detaining latch or some other little mechanical difficulty, which, when attended to, removes the fault. If the drop is found to be in good order, the subscriber's calling generator must be examined, and upon a careful examination will probably show at once the cause of the defect. The friction wheels perhaps slip; or the belt is broken or stretched; or a leading-out wire broken from the hinge of the box, or it may even be ascertained that the subscriber has thought fit to

take off the telephone and thus open the bell circuit before he commenced to call.

have been, perhaps, too prolix in explanation, but such a prolixity would have been a prize to me in the days of my early inspectorships; and it must not be thought, because it has taken so many words, that an equivalent time is occupied in the transaction of deeds to correspond. Every movement made for an accurate test frequently saves an hour of happy-go-lucky trouble hunting. Only one symptom has, thus far, been analyzed, and the subject will, therefore, be continued. T. D. L.

### The Illustrated Wordsworth.

One of the earliest of the nineteenth century English poets to be reprinted in America was William Wordsworth, whose fame was determined here before it was in his own country. \* \* \* The latest editor of Wordsworth is an American, Mr. Richard Henry Stoddard. Mr. Stoddard has some reputation as a poet, a circumstance which ought to make him a good editor of another poet. Whether it has done so the readers of his beautiful book must decide for themselves. \* \* \* Mr. Stoddard's estimate of the poetry of Wordsworth is high, but not, we think, too high. "It belongs to Nature in the largest sense, to what is unchanging in man, and what is permanent in the Universe. It is simple and strong, it is lofty and dignified, and it is gloriously imaginative. No poets ever surpassed him in the creation of felicitous epithets, 'words which are things,' and no poets ever raised the soul to serenest heights of meditation. He is as much above mortality and time as if he were a pure Intelligence." Poems of William Wordsworth is a handsome octavo of 320 pages. It contains eighty-four of his most poetical poems, long and short, the fruits of his opulent young manhood and his wise old age, and is illustrated with seventy-five characteristic designs from the pencils of Sir John Gilbert and Birket Foster, who have gone like docile scholars to the great Master of Nature, William Wordsworth. (W. J. Johnston.)—*N. Y. Evening Mail*.

### The Omaha Telegraphers' Ball.

The second annual ball of the Omaha telegraphers, Nov. 28, was, as it deserved to be, a brilliant success. Among the elaborate decorations of the hall was a tablet inscribed to the memory of the various dead and gone telegraph companies which have been from time to time absorbed by the Western Union. It ran thus:

United States—Mysteriously disappeared.  
Illinois & Mississippi—Excessive opposition.  
Great Western—Starved to death.  
Atlantic & Pacific—Killed in Wall street.  
Pacific & Atlantic—Consolidation fever.  
American Union—Cerebro spinal Jay Gouldus.  
*Requiescat in pace.*

The ball-room was connected with the outside world both by telegraph and telephone. Telegrams of regret were received from Cheyenne, Chicago, New York, St. Louis, New Orleans and other points and one signed by the operators of the overland circuit, Chicago to San Francisco. The various committees were as follows:

Executive Committee—J. J. Dickey, chairman; L. M. Rheem, treasurer; Thomas Curry, secretary; C. J. Smallwood and Geo. W. Shaw.

Reception Committee—J. G. Boyd, Geo. Gardiner, J. B. Pritchard, E. A. Brandenburg, C. M. Woodman, L. H. Korty, chairman; F. M. Crittenden, C. R. Tyler, J. H. McGuire, W. A. McElroy, G. M. Gould, L. H. Fisher, W. J. Rushland, W. F. Sedgwick, J. P. Ellis.

Ladies' Reception Committee—Mrs. L. H. Korty, Mrs. L. M. Rheem, Mrs. Perry Chamberlain, Mrs. George W. Arbuthnot, Mrs. F. M. Crittenden, Mrs. C. B. Horton, Mrs. T. Curry, Mrs. F. B. Williams, Mrs. J. B. Pritchard, Mrs. C. W. Moore, Mrs. E. L. Armstrong, Mrs. G. W. Dickinson.

Floor Committee—C. K. Cralle, floor manager. Assistants—E. L. Armstrong, F. B. Williams, P. Chamberlain, R. C. Hayes, John G. Morse, C. B. Horton, C. W. Moore, C. E. Mayne, G. W. Arbuthnot, T. M. Orr, Geo. M. O'Brien, Jr., G. W. Dickinson, W. H. Hayes, E. H. Allen, C. C. Mayne.

Among those present from a distance were:

Alex. Washington, chief operator, Mr. McGowan, Miss Katie Johnson, Miss Annie Wilson and Miss Eib, St. Joseph, Mo.; Mr. C. F. Annette, chief operator U. P., Cheyenne; M. M. Runyon, agent and operator, Clear Creek, Neb.; B. S. Josselyn, U. P. manager, Grand Island; H. C. Hope, superintendent telegraph, Omaha & St. Paul line; Miss Dohaney, Council Bluffs; D. J. Brann, R. C. McDonald and Aleck A. Stevenson, Chicago.

### Storing Electricity.

Prof. Sylvanus Thompson, of Bristol, lectured on the above subject last night at the Society of Arts. Prof. Adams presided, and the room, which was crowded, was lighted during the lecture by two groups of suspended Edison lamps connected with 40 Faure cells brought to the building ready charged. Prof. Thompson, after explaining the scientific principles upon which the storage of electric energy was based and the various accumulators which had been invented, gave some anticipations of the possible use of the discovery. First, in regard to lighting, secondary batteries would serve for portable supplies of electricity, for accumulated supplies, and for equalizers of electric currents. The value of accumulation was evident in the case of a theatre which might, by accident, be plunged in darkness if dependent on external sources. A possible application was the firing of torpedoes and blasts in mines. Another was the perfection of the telephone in increasing the power of the transmitter by employing a multiple microphone. A hundred microphones united would produce loud and distinct speech. By far the most important of all the possibilities opened out by the storage battery was the utilization of wind and water power. Differing from Sir W. Thompson in his address to the British Association, he believed there were cases where no great expense would be incurred in utilizing tidal areas as basins. The Avon at Bristol required but a few yards of embankment to be turned into such an area. A tenth part of the tidal energy in the gorge of the Avon would light Bristol. A tenth part of the tidal energy in the channel of the Severn would light every city and turn every loom, spindle and axle in Great Britain. Electrical railways and electrical tramways, Prof. Thompson said, were now existing facts, and "many months will not elapse—or it will be an eternal disgrace to the first city in the world—before the fetid and poisonous atmosphere of the Metropolitan Railway is replaced by a pleasant and salubrious air, rich in fragrant ozone; and the like revolution will not be long delayed in many quarters where reform is far less imperative. In all these changes the accumulator will have its part to play." In reply to a question Prof. Thompson expressed the opinion that the cost of the electric lights in the room was less than the cost of gas would be for a mansion which had to provide its own apparatus for the making of gas.—*Pall Mall Gazette*.

### Compliments for the New Book.

From among the many flattering opinions of the new book, "Wordsworth's Poems," received since its publication, we publish the following, as samples of the others. The names are not given, as the views were probably not intended to be made public.

"It is a most creditable output, and eloquent evidence of your good taste and energy."

"The clear and perfect type are just suited to a work of that kind, and the engravings are beautiful."

"I most heartily congratulate the publisher on the good taste displayed in the design and general get up, and hope the venture will meet with the abundant success it deserves."

"I did at one time think it was a mistaken idea on your part to publish such a book, but after seeing it I am fain to change my mind. If every one of your subscribers could see it, they would certainly buy it."

"It is indeed a 'magnificent work,' and I prize it highly. Every one who has seen the book has



praised it, and I hope it will have a very large sale. I think you have put a little better work on this book than on any of your publications, although any publisher might well feel proud of having put out *any* of your books. The paper in this is of superior quality, showing off the fine cuts and beautiful print to the best advantage, while the binding is strong and durable. Altogether, it would be difficult to find a more perfect book in all that goes to make a desirable volume."

#### Notes and Queries on Electricity and Electro-Magnetism and Their Applications.

BY T. D. LOCKWOOD.

Practical as far as possible;  
Theoretical as far as necessary.

170. How should an aerial line be led into a terminal office?

A. Where many lines—either pole or house-top—are run, a cupola is frequently used, into which the wires are led, as indicated above.

Sometimes also they are terminated at a pole, by winding them back on themselves after being bound to the insulator. A plan often adopted in our cities is to range a cross-bar outside the window where the wires are to enter, and screw a sufficient number of hook insulators into it, on which the wires coming down from the fixture or pole are terminated by winding back.

Q. 171. What wire may be used in fitting up an office, and how should it be attached to the walls or ceilings?

A. It is the practice with telegraph employes in general to use about No. 14 covered copper wire, and to sling the wire loosely in and along the ceiling, in any loose way so as to get them in; but it is as easy (and much more satisfactory when done) to do a job of wire-running tastefully as slovenly; and it is a positive science to run the inside wires of a telegraph or telephone office in a manner both useful and ornamental.

To do this, it has been found in practice that it is better to use braided copper wire, of a gauge not larger than No. 18, and of that size, all things being equal, none is so good as that manufactured by E. F. Phillips, of Providence, R. I. To have this wire colored, often gives a very good effect, especially when colored red. But, in any case, No. 18 is sufficiently large to fill every practical purpose, while it is much easier to handle and gives a better general effect when strung.

The wires when chosen should, if numerous, be strung through cleats of black walnut, pierced with the required number of holes, which should only be large enough to let the wire pass through easily. If more than fifty wires are to be put up, it will often be found necessary to bore more than one row of holes and run the wire two or more tiers deep. Each cleat should be screwed to a base-board of hard wood, which is to be screwed to the ceiling. This is to give a greater purchase to resist the strain of the wires when pulled tight. The wires should be secured with a half hitch to the first cleat, and when pressed through all of them, tightened up, so as to take out *all* the slack, and anchored by another half hitch at the last cleat, which should be about two feet above the switch-board, if one is used.

Instead of then bringing them straight down to the switch, it is better to make them into loose spirals, as it adds to the general effect and also gives slack if any wire should break.

If only two wires are to be arranged, it is sometimes convenient to string them on opposite sides of a row of porcelain knobs, till they reach the instruments.

Where extremely powerful currents are used, as, for example, those employed by the Gold and Stock Telegraph Company, the office wires need a much more effectual insulation than paraffined cotton, and kerite or rubber covered is generally employed. In large Western Union offices, the wires are secreted as much as possible.

Close to the entering point of a building should

always be a lightning arrester, which should be connected to a very reliable ground wire. Every wire entering the office ought to pass through the lightning arrester. The lightning arrester ground should never run to a lead pipe or to the same ground that other wires are led to.

A favorite method which has lately obtained in telephonic circles, and which is excellent, is to run the wires clear down to the switch-board in twenty-five or fifty-wire cables. This gives a very clean and neat appearance to the office. It is a very good plan also to keep the wires out of sight altogether, which may be done by ranging them in troughs along the floor and bringing every wire to the switch-board at its rear.

Q. 172. What is the best arrangement of instruments in a telegraph office, operated on the ordinary Morse system?

A. In an ordinary way-office the apparatus consists of the following instruments: a relay, and key in the main line circuit, a sounder or register and local battery in the local circuit, and a switch and lightning arrester; the latter is often combined with the former.

The switch, or if there is none, the cut-out, is placed on the wall and the office wires led to it. If it is a Western Union pin switch, the leading-in wires are led to the binding posts connected to the upright metallic bars, where they remain open until the pins are inserted. Two other wires, called the instrument wires, are led from the side binding screws, under the table, and after the relay, sounder or register and key are placed in position, holes are bored through the table near to the main line binding posts of the relay (these are usually placed at the right hand end of the relay), the key is then fixed, boring holes through the table for its legs, and the wire connected. The order of the instruments is indifferent; that is, it does not matter which comes first or last. One of the main wires is led to one leg of the key, and there fastened to it. A short wire is run from the other leg of the key to one of the relay binding posts. The other main wire is then connected to the remaining relay binding screw, and the main circuit is complete, the order being as follows: Line wire, key, relay, line wire. The plugs are now inserted in the switch. The local circuit includes the local battery, the relay points and the sounder, or register, and is run as follows: After setting up the local battery, which is usually two cells, run a wire from one pole, say the copper, to one of the binding screws of the sounder, which, like the relay, has holes bored near it; then another wire from the other sounder screw to one of the local screws of the relay (these are usually at the left-hand end of the instrument), and a third wire from the other relay local screw to the other pole of the battery. It is perhaps almost unnecessary to say that these office connections must always be made with covered wire, and particular care should be taken to keep all screws tight.

The sounder, or register, is most conveniently placed near the centre of the table, and if a register is used, the paper reels should be fixed one at each end—one to deliver the paper to the register and the other to receive the paper as it comes from the register; the relay is preferably placed at the left of the register, and in the rear, while the key is placed at the right, also at the rear of the table, so that an operator, when sending, has the table whereon to rest his arm. A terminal station is arranged on the same principle, but as only one wire comes in for each line, the other end goes to the main battery and ground. For example, the wire entering the office is led to the switch-board, thence to the relay, thence to the key, after which it is carried to the battery, and the other pole of the battery is connected to the ground.

#### Pacific Coast Notes.

To the Editor of The Operator:

SIR: I have two papers before me, and, seeing both together, cannot refrain from comparison, contrast and retrospect. One is the *Electric*, published by Hayes & Noxon, St. Louis, as the prospectus informs us, and has the comparatively venerable date of 1875. The other is THE OPERATOR of Nov. 1, 1881. The *Electric*, judging by the specimen before me, was a spicy, wide-awake, gossipy sheet, and seems to have been deserving of more than an ephemeral ex-

istence. But "whom the gods love die young," and this is only one of the many publications of the kind that have twinkled for a brief season in the telegraphic firmament and suddenly disappeared from the gaze of mortals.

By the way, "Jeff" Hayes has recently been in the wilds of Arizona, as Western Union operator at Wilcox, the military headquarters during the late Indian scare. After exhausting the attractions of that portion of the frontier, he returned to civilization and the "S. F." office for a short time. It is rumored that telegraphy is merely a "side speculation" with the genial "Jeff," and that he only drops back into the ranks occasionally to keep the rust off and break the monotony of elegant independence.

Turning from the *Electric* of six years ago to THE OPERATOR of to-day, we see as corpulent and self-satisfied a looking paper as an ambitious editor would desire at its still comparatively tender age. The lusty growth and solid success of THE OPERATOR should be, as it is, a source of gratification to every telegraph operator in the country.

The story told in the "Review of the past two weeks," giving the details of the bribery of a Mutual Union contractor's employé by officials of the Western Union, naturally causes a sensation of surprise—not at the apparent fact that officials of the latter company would countenance such a "fishy" transaction, but that any of them would be stupid enough to trust that they could do anything of the kind and not be found out. We have not heard of any reason for doubting that Western Union officials have hired men to chop down the poles erected by an opposition company; and why should the public be surprised at further evidence of total depravity from the same source? That Messrs. Bates and Eckert may be proven innocent in this matter is "a consummation devoutly to be wished," for they have both acquired (and probably deserve) a reputation for manliness in their dealings with employes and the public. It is quite possible that at this distance from the seat of government we are not well posted in all respects, but an impression does prevail here that the Western Union Telegraph Company is practically owned by one man. And if a corporation is owned (or *controlled*, if it sounds better) by one individual, is it possible for any one upon whom he confers a "little brief authority" to be a free agent? This idea is too painfully suggestive, and has a tendency to shake our faith in the integrity of human nature. We will only pursue it far enough to say that many hopeful anticipations of reform, based upon the belief that a certain individual would be as liberal and whole-souled in an official capacity, recently attained, as he was thought to be when an obscure private in the ranks, have been rudely dissipated by the acts of the same individual when he began to feel his puny power. "Oney timers" were sanguine that when General Eckert returned to the Western Union and assumed nominal control, a more liberal policy and better times for employes would be ushered in. And now some of these "old timers," as they hang on to the old positions they have filled faithfully for years, with salaries reduced and new men put over them in more lucrative positions, in solemn, lugubrious chorus sing:

"Ah! ever thus! From childhood's hour  
I've seen my brightest hopes decay,  
The new official feels his power  
And there's the very deuce to pay!  
The dividends must be declared,  
Officials must recognize,  
No doubtful measures will be spared;  
It's not a time to moralize."

We still are hopeful of the Mutual Union, but not too sanguine; we only know that a genuine opposition company will be the cause of an increase of business, and that means an increased demand for operators. Indeed, the demand for good men at present is very encouraging to the fraternity. Speaking of the Mutual Union, we notice that Mr. James Gamble, ex-Western Union superintendent of the Pacific Division, has been appointed superintendent of the new company. Mr. Gamble is a telegrapher of great experience and ability, but by no means popular among operators upon this coast, and not noted for his liberality toward them generally. His resignation did not cause poignant sorrow among the members of the craft here, who were glad to see



the position filled by the gentleman who now holds it.

The telegraphic business of this coast has increased wonderfully within the past two years. The facilities for handling it have not been increased proportionately, and in consequence of the limited number of wires messages are delayed very seriously. A new overland route has been opened through, via Los Angeles, Deming, Pueblo and Kansas City, but as there is but one wire over a great portion of that route it cannot be depended upon for the transmission of a very large proportion of the business between the Pacific and Atlantic coasts. Los Angeles and the offices above mentioned have been supplied with duplex repeaters.

Messrs. Meredith, Swift, Ingram, Cummings and Scholl are the operators at Deming, New Mexico; Mr. Meredith, manager. This is now an important repeating office, the junction of the S. P. with the A., T. & S. F. Railroad. Messrs. McCoy, Dennis and Ward Lane have resigned their positions in the San Francisco Western Union office to accept employment with the same company in Chicago. Mr. Riehle has also left the San Francisco office, and is now stationed at Los Angeles. The San Francisco office is becoming quite unpopular among the fraternity, and we have not lately heard any outsider express a frantic desire to obtain a position in it. The work is hard, its sanitary conditions are not above average, and the bulletin board isn't big enough. At the same time, there is probably no office throughout the country employing as large a force that can boast of an equal number of intelligent, capable and reliable operators.

The carnival of errors still continues. There are some ingenious cheap operators distributed among the repeating offices between New York and San Francisco, who throw a little variety into an otherwise monotonous existence by strange transformations and curious freaks of temporary mental aberration—in brief, by making "bulls." Rumor says these artists are found in greatest number at Omaha and Kansas City.

It may be possible for a message to run the gauntlet of those offices without mutilation, but I wouldn't risk my reputation upon the chance of a single telegram being transmitted between San Francisco and New York without an error. There was a rumor current some time ago to the effect that such a message had been seen, but it was discovered to be without foundation, having been circulated by unscrupulous parties who were interested in "bulling" Western Union stock.

There are just two causes that could produce such a disgraceful condition of the telegraphic service. The first is the employment of the talent(?) and the second is the increase of the duplex and the proportionate multiplication of the man who "never breaks."

We are pained to hear of the death of George H. Bowker, who died at Tucson, Arizona, Nov. 20. He was one of the most expert operators we ever knew, a wide-awake, energetic man, and a genial, good-hearted fellow. May he find a happy dwelling place in the undiscovered country into which mysterious realm he entered before he had reached the prime of mortal manhood.

Nov. 22, 1881.

PACIFICUS.

#### St. Paul (Minn.) Items.

To the Editor of The Operator:

SIR: The Mutual Union opened here Dec. 1. At present they have four wires, two direct to Chicago, one to Stillwater and a pony to Minneapolis. The expectations are that early in the spring they will have a direct wire to Winnipeg and two more to Chicago.

Mr. C. E. Hughes, for many years chief operator in the late N. W. Tel. Co., is manager, and his large experience and well-known ability will render him, without doubt, a popular and successful official.

The force to-day consists of W. L. Cullen, day, and Charles Corser night operator; Henry Minar, counter and check clerk; Dave Naughton and Frank Cavanaugh (no relation to the old man) messengers.

For the first three days after opening C. N. Ds. were distributed to the principal commission men, and so much satisfaction did the work give that seven out of nine regular cus-

tomers of the W. U. forsook their old love(?) and came to the Mutual and asked to be supplied on W. U. terms. Of course they were accommodated. We understand that Supt. McMichael came all the way from Minneapolis and made a personal effort to win them back to his company, without success. General commercial business is increasing every day and comes quite up to what was expected. The wires have been carefully strung and work admirably, and there is every reason to believe that the magnificent poles the company has been enterprising enough to make use of will prevent many of those provoking breaks so common on the opposition lines.

The office is nicely fitted up with all modern improvements, including a handsome walnut quartette table with four sets of nickel-plated instruments.

The general public, realizing the danger of such monopoly as the W. U. has striven to make itself, and disgusted with the poor service lately rendered, have extended a cordial welcome to the new company.

Since the consolidation, numerous changes have taken place in the ranks of the W. U. Very few of the old familiar faces are now to be seen, most of them having resigned to accept more lucrative positions elsewhere. Manager Jilson, of the W. U., has been appointed superintendent of telephone. Clark Davidson, late chief W. U., has been appointed chief operator C., St. P., M. & O. R. R. Billy Moore and Dad Anderson have accepted positions with the M. U. in Milwaukee. H. E. Thompson, of the W. U., has gone into the electric supply business in this city.

Alf Chantler still takes press reports for the *Pioneer* in a very satisfactory manner.

The following comprise the present force in the W. U.: Mr. E. Curry, Manager; D. L. Wilson, Chief Operator; C. B. Coningham, Assistant Chief Operator; W. D. Gregory, Night Manager; operators, Mr. Stewart, Harry Collins, C. H. Lord, W. R. Jones, Mrs. C. H. Lord, Miss Tyrrell, L. A. Hughes, Miss Eccles, Mr. Moreland, Lew Wise, Jas. Purtell, Percy Percell, Mr. Farar, W. C. Hendey, cashier.

In the Dispatcher's office of the C., St. P., M. & O. R. R. we find Mr. J. L. Ritter chief train dispatcher, ably assisted by Messrs. Crookshank, Gillis and Fordyce. Mr. H. C. Hope is the popular Superintendent of Telegraph on this road. J. F. Hine, an old army telegrapher, is acting private secretary to J. F. Lincoln, Superintendent of the road.

The Brotherhood of Telegraphers are in a flourishing condition here, numerically and financially. A club room has been nicely furnished for holding meetings, social gatherings and reading rooms. The first annual ball and reception under its auspices will be held Dec. 20, and promises to be a very enjoyable affair. Invitations can be had on application to Messrs. Minor, Thompson or Chantler.

Frank Minor recently paid us a visit from Fort Snelling. His many friends in Chicago and Omaha will be glad, no doubt, to hear that he is a perfect picture of health under this invigorating climate.

#### Diamond Cut Diamond.

The Western Union monopoly have shrewd men in their employ, but not shrewd enough to combat the cunning of some other smart people that the exigencies of the hour are fast developing. The new American Rapid Telegraph Company planted one of their immense poles on Friday, on Third street, in front of their proposed office, not half-a-dozen doors from the office of the old company, and within two feet of one of the poles of said company. The pole was a tall one, and from its topmost point seemed to look down with contempt upon its shorter neighbor. The cross pieces were bolted on it preparatory to the hanging of [the wires of the company on Saturday. But Friday night the Western Union boys had their pole spliced and raised their wires so that the American Rapid Company would not be able to place their wires on Saturday. The joke turned and the laugh rebounded when, without the slightest trouble, the latter company hung their wires and completed their labor, and "all in spite of my Lord Cardinal."—Harrisburg (Pa.) Patriot, Dec. 12.

#### Making War on the Brotherhood—A Manly Letter.

To the Editor of The Operator:

SIR: "For ways that are dark and tricks that are vain," some managers of telegraph offices are peculiar. Why they should be any less honest or straightforward than others, I know not, but that they do often resort to tricks mean and dishonorable I know. Perhaps the cause is at the fountain head, and they feel compelled to lie and scheme in the dark in order to please the "mighty potentates" (?) over there, or, perhaps it is a desire to emulate their superiors that animates them, and the wish to be considered as shrewd in scheming. But whatever the nature of the cause, the result is the same; the poor creature is no sooner placed in power than he is seized by the "big head;" his manliness and integrity (if he ever had any) are forgotten or made to occupy a secondary position to his concealed ambition.

An example of this recently occurred in the Chicago office of the Western Union Telegraph Company. Three months ago I was numbered among the staff of that office, and had been for over four years. For urgent reason of a domestic nature I desired to remove to St. Paul and applied to the St. Paul office for a position, at the same time informing Manager Maynard of Chicago, and asking his support for the application. In about three days I received from St. Paul an offer of a position and accepted it.

A few days later the chief operator there sent me word as follows: "Withdraw your resignation. No vacancy. Will give you the first opening." This surprised me, for I knew they were in want of men. I waited patiently for several weeks, and during that time no less than six vacancies were filled, but there was no place for me.

Again I went to Manager Maynard and asked his permission to exchange places with a St. Paul man who wanted to get to Chicago. He replied that he had no objections, providing I could arrange it satisfactorily with the St. Paul officials. I tried the exchanging process, but without success. They were still needing men in St. Paul, but, for reasons I could not understand, they would not accept my services. Finally I was tendered a position on the St. P., M. & O. road. This I accepted and left Chicago as soon as possible.

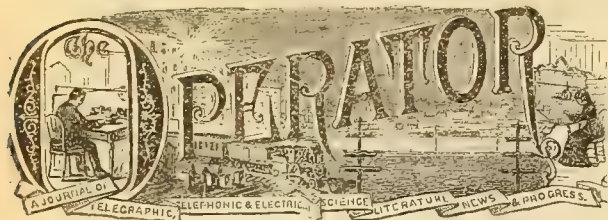
Since coming here I have learned the true inwardness of the case, which pictures Manager Maynard in a very unpleasant light. It seems that as soon as I told him I had applied to St. Paul, he wrote to Supt. McMichael, at Minneapolis, informing him that I was a member of the Brotherhood of Telegraphers, a correspondent of THE OPERATOR, an organizer and an agitator. Upon learning this, the Superintendent instructed the Manager in St. Paul not to hire me.

After rendering Mr. Maynard over four years of faithful service I am puzzled to conjecture why he should have gone out of his way unkindly and unjustly to besmear my character to such an extent that I stood before the St. Paul officials as unfit for employment. Had I been of drunken or dissipated habits, I could have understood it, but as I was always at my post and careful in my work, not an agitator nor an organizer, I failed to detect his reason. If to send an occasional item of news to THE OPERATOR is to unfit men for honorable employment, it is time all operators understood it so; or if to belong to a benevolent organization, simply because it is composed of telegraphers, is a disgrace, it is time they understood that also. I am a member of the B. of T., and am rather proud of it than ashamed. If ever trouble is brought about in connection with the Brotherhood, it will be through the instrumentality of meddling managers. I have asked Mr. Maynard to withdraw the false charges against me; but as he has so far declined to take any notice of my request, I do not see any other way to right myself, and warn my fellow workers of the dangers they are in through Mr. Maynard's duplicity, than by placing the matter in the columns of THE OPERATOR. My good name is very dear to me, and I want Mr. Maynard and others to understand that they cannot tell lies about me without standing the consequence.

W. L. CULLEN.

ST. PAUL, Nov. 21, 1881.





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## NOTICE.

Those whose subscriptions expire with the present or with next issue, will confer a great favor by FORWARDING THEIR RENEWALS PROMPTLY. By so doing they will save us trouble and themselves the possible annoyance of missing any of the numbers. TRY IF YOU CANNOT get two or three other SUBSCRIPTIONS TO SEND WITH YOUR OWN. An order for some of the books we publish would also be acceptable.

## STUDENTS.

In this issue of THE OPERATOR we surrender considerable space to the gratuitous advertising of that great bane of the American telegraph—the “College.” It is a subject which, more than any other one thing, concerns the salaries and the general welfare of the profession; and it is one, moreover, to which every true operator who desires to see his chosen occupation elevated to its proper standard should pay the strictest attention.

It is a subject which also concerns the general public, as well as the municipal law officers in various parts of the country, since your average “Professor” in this branch of business is usually an unprincipled swindler, who should be avoided by the former, and taken in hand and disciplined by the latter. We have endeavored in this issue to show up some of their methods of advertising, although the want of sufficient space makes the showing necessarily brief. There is enough, however, in the astonishing advertisement of the “Union Electric Telegraph Instruction Company of California”—which gravely prints a list of offices on “our practice circuit,” including the cities of San Francisco, Cheyenne, Chicago, Philadelphia, New York and Boston—to set upon it the stamp of a heartless fraud. This same concern also advertises in the local papers one day for “four young men, to learn telegraphy,” and the next day for “four young ladies,” to be similarly fleeced. Any one with half an eye may observe how cunningly these advertisements are worded, leading poor young men and still poorer girls to believe that they have already procured situations for the last batch of learners, and will just take four more to do likewise with them, as though there were four vacant positions to fill. It is needless to say that, by this means, many persons, who in time of prosperity laid a few dollars aside for a rainy day, are easily “relieved”

of their scant resources by an unconscionable “company,” which talks vaguely of its “influence” with superintendents and leads the innocents to believe that they can supply them with positions “when qualified.” These men are shrewd enough to leave a loop-hole to crawl through when the exasperated learner, made desperate by failure to get work, comes back to them with his or her complaint, maybe charging them with swindling. In such cases the answer comes with surprising promptness, made perfect by practice, that the only trouble is that the learner needs more practice; in other words, the “Professor” tells them that they are not yet “qualified,” and blandly suggests private lessons (at a moderate charge, of course), as a means of overcoming any difficulties in the way of securing some good position.

What do our readers think of the assertion that “If all their work could be done at once, the operators could finish what they generally have to do each day in two hours; but as it comes scattered through the whole day, they hardly realize that they have done any work. It is almost like being paid for sitting in a pleasant office and studying or reading”?

Then, we have “salaries paid, \$80, \$90, \$100 and \$115 per month for large offices,” all of which is a base fraud upon the public and damaging to us.

That kind of advertising is, taken all in all, rather amusing to those toilers who, from sad experience, know better; but there is a serious side to the question which it behooves us to watch closely.

A NEW division of the signal service has been established by Gen. Hazen, chief signal officer, with a view of extending the service so as to include the observation of the weather at sea, and captains of vessels are to be asked to co-operate in this service. What is wanted particularly by Gen. Hazen is an observation to be made daily, whether in harbor or on the ocean, consisting of the latitude and longitude, height of the barometer, temperature, direction and force of wind and general character of the weather. The reports, upon the arrival of the vessel in port, are to be forwarded to Washington, in envelopes provided by the department. These reports are converted, tabulated and published in the international bulletin, a copy of which will be furnished to each observer. The object of these observations and reports is to ascertain definitely the tracks of storms around the globe, and to determine the meteorological conditions in each ocean square at the time when, on land, the simultaneous observations—12:08 P. M. Greenwich time, or 7:23 A. M. Boston time—are taken. It is hoped, and, indeed, confidently expected, that the department will be enabled, after proper observations, to follow the course of storms around the world, whereas, under the present system, the track of the storm is lost sight of at the sea coast. It will be seen that the aim of the service is an important one, and, when the system shall have been systematized, it will be of almost incalculable benefit.

THE quarterly report of the Western Union Telegraph Company was submitted by President Norvin Green to the directors of the company yesterday, Dec. 14. A quarterly dividend of 1½ per cent. was declared, payable Jan. 16, 1882. The stock-books of the company will close at 3 P. M. on Dec. 20, and remain closed till Jan. 17. The official returns of the company’s business for the quarter ending Sept. 30

last amounted to \$2,104,635.75, an excess of \$154,741.14 over the estimate presented at the quarterly meeting held Sept. 14. A surplus of \$629,759.91 existed Oct. 1. The net revenues for the quarter ending with the close of the present month, based upon official returns for October, nearly complete returns for November, and an estimate of the business for December, are placed at \$2,010,527.27, which, added to the surplus of Oct. 1, will make a total of \$2,640,287.18. To be deducted from this amount is interest on the company’s bonded debt, \$107,000; for construction and purchase of telegraph stocks and properties, \$300,000; sinking funds, \$20,000—a total of \$427,000, leaving a balance of \$2,213,287.18. The payment of the 1½ per cent. quarterly dividend on capital stock will require \$1,200,000, which, being deducted, will leave a surplus of \$1,013,287.18.

WE have to-day shown to the executive officers of the Western Union Telegraph Company how some of their local managers are appropriating the company’s material and time for the purpose of sustaining so-called Telegraph Colleges, as a means of profit to themselves. For the guidance of all parties, we reprint below W. U. Executive Order 171, which appears to have become obsolete, and respectfully ask if it is still in force:

EXECUTIVE OFFICE,  
WESTERN UNION TELEGRAPH COMPANY,  
NEW YORK, Oct. 30, 1877.

## Executive Order No. 171.

Under a misapprehension, doubtless, of their obligations to the company, some of its employes have, without proper authorization, engaged in enterprises outside of their legitimate duties, which have, to a greater or less extent, been in conflict with the interests of the company or of other companies associated with it; such, for example, as the construction of private telegraph lines, the introduction of telephones, or as agents for fire and police telegraphs, insurance companies, et cetera.

No employé of the company should engage in any other business or accept any other employment without previously receiving the written consent of his respective District and General Superintendents.

This order does not prevent employes of this company from acting as agents for the Gold and Stock and American District Telegraph companies, and of the various railroad companies worked in connection with the Western Union.

WILLIAM ORTON, President.

The “et cetera” covers the keeping of telegraph colleges at the company’s expense.

IN speaking of the rupture of the new American cable, our esteemed London contemporary, the *Telegraphic Journal*, seems to believe, like Mr. D. H. Bates, that there is something “strange” in it. It pithily says: “As a large holder of Anglo-American stock, Mr. Jay Gould may possibly not look upon the accident in the light of a great disaster.” Our esteemed contemporary might even go back a couple of years, and note the striking comparison between the “strange” management of this cable and of the last one in which Mr. Jay Gould was interested. On the 18th of November, 1879, the steamship Faraday appeared off North Eastham, Mass., and, picking up the shore end of a cable, completed the alleged communication with Brest of the French Telegraph Company of Paris and New York. The older companies at once came down in their rates to 12½ cents per word, whereupon something “strange” happened to the New French cable, and for months they were unable to work it. In this case of the American cable, the older companies reduced their rates Aug. 1 to 25c. per



word, since which time it has not been "worked"—that is, outside of Wall street.

THE Electrical Exhibition at Paris closed on the night of Sunday, Nov. 20, having produced a net profit of \$80,000. During the last day and evening, admission being free, there was a vast multitude in attendance, the main hall and galleries being crowded with visitors of the artisan class. Shortly before 11 o'clock every steam whistle and electric bell was set going, and in the midst of the distracting din the building was cleared and the exhibition came to an end. The exhibits will now be taken to the Crystal Palace, London, where the spacious terrace and ample space in the interior will afford every facility for a thorough exhibition of the electric light. The entire exhibition, however, will be less comprehensive than the one just closed at Paris. We look forward to the day when New York shall honor herself and American telegraphs by a similarly prosperous exhibition of electrical appliances.

THE letter of our esteemed correspondent, Mr. W. L. Cullen, is a manly utterance, which should have a beneficial effect on those managers—there are many of them—who continually lie to and otherwise deceive their subordinates. We deprecate anonymous attacks, but when a man comes out over his own signature and says, "I want Manager Maynard and others to understand that they cannot tell lies about me without also standing the consequences," he is kind of talking business like. Our fraternal organization will in time do much toward the crushing of sniffing "managers," who by double-dealing and official obliquity ruin the *morale* of the company's splendid force of operators; but, for the present time—with Gen. Eckert and Mr. Bates so eager to discover and correct frauds and shams of all kinds—one blast from a bugle-horn like that blown by Mr. Cullen were worth a thousand men.

THERE is no reason why the managers of our system of electric lighting should not give us the true candle-power of their lights, without the misleading exaggeration involved in the use of "the French measurement." This term means that the candle-power is measured at the four points of the compass, and the results are then added together, thus giving the candle-power four times its true value for purposes of comparison. If it must be used at all, this French measurement might as well be extended to each of the 360 degrees forming a circle around a given centre, and by thus adding the results together a comparatively small light could be given any degree of candle-power. A better way, though, is to go back to first principles, and give us only the true candle-power of an electric light.

THE secret efforts of a Western manager practically to black-list an operator, under guise of friendship, for his connection with the Brotherhood, may possibly be the beginning of a war upon that organization. If that be the case, we advise the executive officers to see that their local managers go slow on this point. No level-headed chief in any concern ever yet precipitated a crisis; it is your blundering, pettifogging, enthusiastic sub-chief who fires the train, and he ought to be officially gagged in time. Mr. W. L. Cullen is a reliable operator and a most estimable gentleman, and his sturdy letter will appeal to the finer feelings of every true man and

of every one who despises double dealing and deceit, although we presume it will arouse emotions of an opposite character in the breast of Manager Maynard.

THE electric light has now to bear suspicion of responsibility for the Vienna theatre disaster, in which a thousand lives were lost. Gas was used in this theatre, but it was lighted by an electrical contrivance, so that the fire must rather be blamed upon the gas. Still, the fire at Landenberger's mill, in Philadelphia, recently, by which a dozen lives were sacrificed, was directly traced to the electric light, and the frequent reports of accidents from the same cause should direct attention to the extreme peril to life and property involved in the use of the deadly current.

The subject of the thorough insulation of electric light wires is of the greatest importance, and should be thoroughly investigated by our scientists.

SINCE our last issue the Pennsylvania Railroad has had four accidents, on its division between this city and Philadelphia, inside of 24 consecutive hours. It is not quite six months since, on the occasion of their torturing to death two ill-starred human beings by an "accident," at Bear Swamp, a coroner's jury very properly censured the management for its parsimonious methods. Since then they came near killing their own General Manager, Frank Thompson, and actually battered his car into kindling wood. The Pennsylvania Railroad is alleged to run by telegraph, and it pays the bulk of its operators less salary than any other large corporation in Christendom.

THE recommendation of President Arthur, in his annual message, that Congress provide for the repayment of the personal expenses of our honorary commissioners and delegates to the Paris Electrical Exhibition should be acted upon at an early day. The gentlemen gave their valuable time and experience at the instance of the State Department, and without prospect of other reward than the proud consciousness of a great work grandly done; and, since the results have been so eminently creditable to America, we should not object to paying the expenses of those who worked so assiduously to that end.

THE law demands that two Signal Service Sergeants shall be promoted to be Second Lieutenants every year, yet none have been so advanced for two years. A reference to the *Army Register* for 1881, gives the following list of Second Lieutenants in the Signal Corps: James A. Swift, appointed Nov. 1, 1878; Leroy E. Sebree, Nov. 4, 1878; Joseph S. Powell, Nov. 13, 1879; William A. Glassford, Nov. 14, 1879. The promotions seem to have been neglected in 1880 and 1881, and the fault, we believe, is with General W. T. Sherman.

If the opposition telegraph companies are becoming discouraged, let them remember that it was testified, in the telegraph suits last May, that the Western Union Telegraph Company knowingly paid for the American Union more than twice its face value, the Directors of the older company being more than willing to forget the actual value of the opposition, while they looked only to the value to them of getting it out of the way. This is sworn testimony, and on record in the Superior Court, to be proved by anyone.

ANOTHER absurd "marriage" by telegraph took place at Jacksboro'—appropriately named—Texas, on the 6th of December. The bride and groom were at Fort Sill. As no person authorized to tie the knot is in that vicinity, the couple had recourse to the wire. County Judge Jones pronounced the words, and Lieut. W. A. Glassford, of the United States Signal Corps, who is there en route to Denver on a tour of inspection, transmitted the lightning that was supposed to unite the notoriety-loving pair.

It may be interesting and profitable for the managers of the Mutual Union and other opposition lines to reflect upon the great advantages of co-operation between telegraph and railroad companies. Dr. Green said in an interview recently that, strange as it might seem, his (the Western Union) company paid the wages of less than one thousand offices, although it has a total of eleven thousand offices, the remaining ten thousand being paid by the various railroad companies along whose tracks the wires run.

THE consolidation of the *Evening Mail* and *Evening Express*, of this city, gives Mr. Cyrus W. Field control of a paper well worthy of metropolitan journalism. The vast energy and enterprise of Cyrus Field are too well known to telegraphers to need recital here, and if those qualities are directed toward his journalistic enterprise as generously as they have been bestowed upon his telegraphic ventures, there can be no question of the success of the *Mail and Express*.

WHEN the telegraph wires were recently run through the sewers of the city of Washington it was claimed by many that the vexed question of subterranean telegraphy was settled. The plan has, however, failed, and the District authorities have directed their removal from the sewers. It was found that they retarded the flow of water by gathering and retaining matter, which stopped up the sewers.

THE President's message, containing 14,935 words, was sent over the Western Union wires this year, from Washington to New York, in 58 minutes, copies being dropped at Baltimore and Philadelphia. Twelve single wires were used. This is quick work, while the admirable style in which the operators turned out the copy makes it doubly creditable to the company.

It was rumored recently that the Mexican Government was about to establish a new Cabinet office, to be called the "Ministry of Communications," and to have cognizance and supervision of railways, telegraphs and the mails. The idea was scouted, however, even in Mexico, so that we anticipate short shrift for such a proposition in this country.

THE San Francisco telegraph college, which commences its advertisement with a Scriptural quotation—"their line is gone through all the earth"—may be set down as a pious fraud. They have probably not noticed the sarcasm in the synonymous phrase, "Their lyin' is gone through," etc.

ON the 30th ult. a Mutual Union wire was worked direct from this city to Chicago without repeaters.

WE wish all our readers a very merry Christmas, and many happy returns of the day.

WESTERN UNION stock is quoted at 86¾. Last issue it was 85½.



## Important National Capital Matters Discussed.

### To the Editor of the Operator:

SIR: A petition signed by every man on the day force was this morning handed to Manager Whitney. The signers petitioned for a decrease of Sunday labor, quoting that religious and civic law have declared that Sunday should be a day of rest. "Six days shalt thou labor and do all that thou hast to do," and the Operators contend that this great command should hold good with the Western Union Telegraph Co., unless they are "inspired by the Deity" to change this commandment.

After setting forth their grievance, the petition closes with the following: "We, the undersigned telegraphers of the day-force, regard Sunday work as a hardship, and do most earnestly and respectfully petition you to reduce it to the very lowest minimum, and that every member of the force thereof be obliged to perform his portion of the work."

According to the above, there are some men who are excused from Sunday work, and this petition appears to ask that no partiality be shown. Truly a just proposition, and one that should have immediate notice. I wish the gentlemen success.

I understand that the management opine that this petition emanated from the officers of the Brotherhood, or, rather, is an outcome of that organization. But your correspondent can assure those worthy gentlemen that this most excellent petition, although signed by many of the "circuit," is altogether outside of that organization, and is somewhat foreign to their views of "fixing" Sunday labor. The Brotherhood hold that men should be paid extra on Sunday, and at one of their late meetings a resolution was unanimously adopted, and "hit goes sumn like dis:" "Resolved, That where Sunday labor may be necessary it should be considered and compensated for as extra service."

As the Washington "circuit" of the "Telegraphers' Union" is not a secret affair, I was allowed to peep at their constitution the other day, and received permission to quote from it. Herewith the object:

"The purpose of this circuit shall be the improvement of its members by industry, economy and co-operation; also a full protection of their interests; the providing of a fund for the benefit of its members in time of sickness, accident or loss of employment, and to assist in defraying their burial expenses in case of death; also making a vigorous and persistent effort to prevent the wholesale teaching of our art."

I predict that an organization with the above principles in view will surely succeed. It should reach and have the support of every commercial telegrapher in the District, as it not only offers a full protection to its supporters, but, better than all, charity. I will quote a chapter on "benefits."

"The chair shall be empowered, on being notified of the necessity, through sickness, accident or loss of employment as the result of affiliation with this organization, of any member of the circuit, to order such assessment *per capita* as shall net to such sick, suffering or discharged member a sum of not less than eight dollars per week. Provided: It be not possible to secure the salary of such member by the filling in of his time by members of this Association, each and every one of whom shall consider himself bound so to do when such course shall be found practicable. Upon being notified of the death of a member of the circuit, it shall be the duty of the chairman to order such assessment *per capita* upon all members of the circuit as shall enable the Secretary of the circuit to place at the disposal of the nearest surviving relatives or heirs of the deceased member the sum of fifty dollars."

Reader, have you ever heard of a beneficial association on such a basis as this? So broad, so simple, so full of charity? Do you know, Mr. Editor, of any other aid association that will guarantee its members full salary when sick or disabled? Here is a party of men who unselfishly pledge themselves to "fill in" their brothers' time—to give him his full salary in times of trouble. They do not even limit the period of benefits. They simply declare to "fill in" the member's time when practicable, be it one or fifty-two weeks. This is an entirely new phase

of aid associations, and, if successfully carried out, it will enable them to say with the prophet of old: "Behold how pleasant a thing it is for brethren to dwell together in unity"—to labor together in love—a protective association, indeed!

The chapter on vacancies is entirely new, and, no doubt, will be adopted by other branches of the "union."

"Vacancies existing in this circuit shall be reported at the regular meeting. The circuit, after a full and free discussion, shall then decide upon the salary its members shall accept in filling said vacancies. The decision then rendered shall be final. The Secretary shall report the vacancy or vacancies, also the report of the circuit decision, to all other brotherhoods of the "Telegrapher's Union."

The Association does not dictate terms to any corporation. It does not seek to foster strife. It merely guarantees to furnish operators at a fair salary. Of course it strikes against reduction of salaries, and the Western Union Telegraph Company has been reducing salaries steadily for years, and is still at it. Every now and then there is a great ado about men having their salary increased. Upon investigation, perhaps you may find that one or two operators have had a paltry increase doled out to them, and while at the same time a half a dozen new men have been brought in, filling vacancies at ten to fifteen dollars per month less than the retiring operators received. This is not increasing salaries. So I contend that the Western Union Telegraph Company has never increased our salaries. No, Never! (Ah! my smart critic, I got ahead of you that time.) But this vacancy article, adopted by the Washington Circuit, strikes at the root of this salary system. It is a true remedy, as it prevents the members from accepting a position at less salary than his predecessor received. All our honest writers admit and prove this steady reduction of salaries. "Justitia," in THE OPERATOR of Dec. 1, says: "Although the officials of the company claim that they are not reducing salaries, they have been doing so for years past, in pursuance of this unjust policy of filling vacancies by promotion from lower grades without a corresponding increase of salary, so that a promoted operator doing the same work as his predecessor, seldom or never succeeds in getting the same salary." I, therefore, recommend the adoption and carrying out by the fraternity of the article the Washington circuit have so unanimously adopted. "Justitia" also urges us to organize. Right you are, Justy. But, old fellow, when you join us, I pray thee do not forget the vacancy chapter. It will "fit" you. "You'll like the paper on de vall." In fact, the vacancy idea was conceived by a paper hanger.

Of course it is patent to all that telegraph management can look elsewhere, can go outside of the organization for help, and the "circuit" have no right nor will they offer the least hindrance to this, but, rest assured, telegraph companies cannot engage a member of the "Union" at a less figure than fixed upon by the Washington branch. Then, again, corporations or private lines can secure better talent from an organization of this kind. The operators are far more able to judge of a man's ability than the managers or superintendents, and know exactly what salary to name for every member they have.

An enthusiastic member said to me the other evening: "We have classed our men and are now open for engagements, who will be the first to engage us? Can furnish anything you desire, from a switchboard manipulator down to a check-boy."

The following has a prominent place in the "circuit's" by-laws: "That no member shall be allowed to teach our profession, except to the brother or sister of a member; and all members are required to discourage others from so doing for a period of five years from the adoption of these by-laws."

Several years ago the paper hangers adopted something similar to the above resolution and today they name their wages, the old labor problem of supply and demand making itself felt. Herein lies the telegraphers' success, stop this radical evil of "plume" teaching and we shall conquer. I wish some good fairy would show the operators where their folly will land them—this teaching of their intimate friends (?).

Our wide-awake champion, THE OPERATOR,

has the heartfelt thanks of the Washington telegraphers for noticing in its columns the complaint in regard to government clerks who work in the W. U. office, and I am pleased to learn that the fraternity at large are taking notice of this injustice. The operators also vote Gen. Hazen an honest man for his attempt to break up this evil by withdrawing the signal operators, Field and Painter. If the General had his way, these men would not bother the W. U. operators much longer. But rumor says that Secretary Lincoln was waited upon by the management and induced to return these men to the Western Union office, where they, with three other government employes, are now engaged in the great "salary-grab" game, giving out the old "Boss" Tweed boast: "What are you going to do about it?" These government fellows say that they can work here as long as they wish, whether regular operators remain out of positions or not. Already several men have been refused positions in this office on account of this radical injustice. There was an operator refused a job to-day, and he only asked for extra work.

If this be true, that the company begged the government for their operators, and we infer it is by their distasteful presence in the office; it shows that the company are lamentably weak; that they find it very difficult to get first-class help without offering fair wages; and this fact the brotherhood should not fail to note. One of the boys says that it wouldn't surprise him to see "Bobby Lincoln and the Chinese Minister down here working one side of a quad."

Suppose we see who these government men are, and the salary they receive per annum from Uncle Sam, also from Uncle Gould. Herewith the list:

	Gov't.	W. U.	Total.
Whepley.....	\$1,800	\$1,020	\$2,820
Braulik.....	700	1,100	1,800
Fields.....	1,100	1,100	2,200
Painter.....	1,100	1,100	2,200
Concannon.....	900	1,100	2,000

What think you, brothers, is a government clerk's lot a happy one? You will notice that Braulik receives the lowest government salary on the list, but he only works seven months out of the twelve, with the "daddy" hours from 10 till 3. All these government employes have easy hours.

I will take at random the names of five first-class W. U. men, also giving their regular salary per annum and the extra money they make by working many weary hours of overtime:

	Salary.	Extra.	Total.
Mr. Thos. Maddux.....	\$960	\$250	\$1,210
Mr. Robt. Deakers.....	900	240	1,140
Mr. C. L. McArthur.....	960	250	1,210
Mr. Adams.....	900	240	1,140
Mr. Van Emborg.....	700	200	900

You will see (notwithstanding that comparisons are odious) that the regular salaries paid by the government are almost equal to, and in one case exceed the combined regular and extra work of the Western Union men, not taking into consideration the long hours of the W. U. men during their regular trick; and at the same time these men are keeping other Western Union operators from obtaining positions in the Washington office, and also preventing the regular force from an increase of salary that a shorter force would necessitate. Oh, that a telegraph "crank" would show up in Washington office with that inspired word of "Removal!"

When members of trades unions are out on a strike, the men, or rather the tramps, who come in and take their places are designated as "rats." I wonder by what name we should call these well-fed fellows who swoop down upon us with such itching palms. Name them, "Justitia."

Quite a sensation was created the other day by the following mysteriously appearing on the office blackboard: "Gen. Hazen, Chief of the Signal Bureau, has issued an order making the day's work from 8 A. M. to 5 P. M. It has been from 9 A. M. to 4 P. M. The change is necessitated by the pressure of work." And attached was this sarcastic query: "To what office does this refer—Western Union or Signal office?"

As Denny Harmon would remark, "You had 'em there." Our jolly Chief Bender ordered the signals down, thirty all around.

Some one writing you an account of the Long Branch and Cleveland trip signed himself "Fairplay." Allow me to subscribe myself

FAIRPLAY ENCORED.

The Associated Press wire between New York and Washington has been quadruplexed, with repeaters at Philadelphia and Baltimore.



## Boston Notes.

To the Editor of *The Operator* :

SIR: The President's message was received over four wires from New York, within the space of two hours. The feat was not marked for its rapidity so much as for the excellent manner in which it was turned out.

Considering the fact that it had to be pushed through 11 sheets of manifold, the copies were everything that the compositors could wish for, and that is a great deal. Messrs. Hennessy, McCarty, Finan and McMahon took the message here. Messrs. Kelly and Dickinson, of this office, went to Worcester to receive the message at that place.

Mr. C. W. Henderson is now acting manager W. U., with Frank Stevens and D. D. Devereux, chief and traffic chief, respectively. Business has fallen off somewhat, which, of course, is to be expected at this season of the year. Very few changes just now; everybody seems to have settled down for the winter. The practice of changing tricks from day service to that of night is carried on among the operators to a considerable extent, a privilege allowed by the management, and one greatly appreciated by those who are qualified to make such changes.

J. M. McLean, of Philadelphia, is here on night force. W. J. McClure and Jas. A. Dougher, of the day force, have also joined the "owls." Miss Hattie Partridge, who for the past twelve or fifteen years was manager of the ladies' department, resigned to accept a very nice position as operator for a prominent broker in this city.

U. KNO.

## Pennsylvania R. R. Operators' Pay.

To the Editor of *The Operator* :

SIR: In a paragraph in your issue of Nov. 15 you say the Pennsylvania Railroad pays its operators \$29 per month. This assertion is so sweeping in its character and so manifestly unjust to the Pennsylvania Railroad, of which I am a representative, that I hope you will allow me to correct the impression which is the natural outcome of such a statement. If there are any \$29 offices, they are vastly in the minority. In the majority of offices the salaries range from \$50 to \$70 per month, and operators have made from \$90 to \$100 by extra work. In most of the Philadelphia offices eight hours constitute a day's work. Promotions are the rule rather than the exception, many operators now holding positions which require experience and ability. The excitement and bustling activity incident to a busy railroad office differ materially from the monotonous routine of a commercial office. The Pennsylvania Railroad officials are men with broad and liberal ideas relative to the relations which exist between employer and employé. By furnishing passes to our distant homes and for other purposes, they show their appreciation of a desire to promote the interests of the company, and furnish us pleasure which in many other lines of business we would not be able to enjoy.

As a class the Pennsylvania Railroad operators will compare favorably, in point of intelligence or gentlemanly deportment, with any similar body of employés. However, if any one feels like shedding a tear over our forlorn condition we would say affectionately, "let it drop;" but wish it understood that we will not lie awake at night should we not be the recipients of such favors.

HAWKEYE,

Signal Service, P. R. R.

PHILADELPHIA, Dec. 10, 1881.

## From the Organ of the Trade.

W. J. Johnston has just issued an illustrated edition of the "Poems of William Wordsworth," edited with an introduction by Richard Henry Stoddard. Of Wordsworth and his poetry, and the scope which it offers to the artist's pencil, we need not say a word. As the world grows older, the poet, reflecting the tastes and tendencies of his time, draws nearer and nearer to nature, and the poetry of Wordsworth is better appreciated now than when he first gave it to the world. Artists, too, have stopped painting gods and dragons and battles, and now study nature in all her simple but beautiful phases. Wordsworth's touching word pictures furnish to the artist an unlimited field. In the present volume, the wood cuts, of which there are more than sev-

enty, are excellent interpretations of the poet, and they add much to the force of the verse. The book is a square octavo, printed in clear, large type, on heavy and beautiful paper. It will make a most acceptable holiday gift.—*American Bookseller*.

## TELEPHONE DEPARTMENT.

The authorities at the Vatican have rejected an application to put a telephone in that place.

Greece now has the telephone, established between Athens and the Piræus, for the service of the War and Navy ministers.

The Philadelphia *News* says: "Always beginning a conversation through the telephone with 'Hello,' must be a good rule, for it works both ways. The average man first yells 'Hello,' and then, when he can't hear anything but a buzz, reverses the word."

The Bell Telephone cases await the decision of the Examiner of Interferences, which is promised in a few days. The Examiner thinks it will take at least two weeks longer to look over the evidence submitted in the recent examination, which is quite voluminous.

The Cheshire County Telephone Co., of Keene, N. H., has a No. 14 steel telephone line 35 miles in length, equipped with 15 of Charles Williams, Jr.'s No. 1 magneto bells, which, the manager says, "work to perfection. We can ring all the bells from either end up sharp, and can talk over the line as distinctly as over any line I ever saw. We invite inspection."

A Cincinnati man, about to raise a telephone trumpet to his ear one day recently, was startled to see a flame leap from it to the height of six inches. The operators at the central office witnessed a similar startling effect, it being caused by the telephone wire coming into contact with an electric lighting wire. The wires of both parts of the telephone instrument were destroyed.

The certificate of incorporation of the Tropical American Telephone Company, limited, has been filed in the office of the County Clerk at Freehold, N. J. The incorporators are Frederick M. Delano, of Detroit, Mich.; James H. Howard, of Boston, and James B. Richards, of New York. The object of the company is the construction and operation of telephone lines and exchanges in the several cities, towns and villages in the West India islands (excepting those of Cuba), Central America, Panama, Venezuela, United States of Colombia, British, Dutch and French Guiana.

Articles of incorporation have been filed for two telegraphic and telephonic companies with headquarters in Ogden, Utah. One company is known as "The Wyoming Telegraph and Telephone Company," with J. J. Dickey as President, L. H. Korty as Vice-President and C. F. Annett, Secretary and Treasurer. These officers are all residents of Omaha. The other company is "The Idaho Telegraph and Telephone Company," with the same officers except that A. J. Pattison, Manager W. U., Ogden, is Secretary and Treasurer. The object of these two companies is that of operating telegraph and telephone lines throughout Wyoming and Idaho Territories. The capital stock of each is placed at \$50,000, in shares of \$100 each.

## DASHES HERE AND THERE.

Electric lights have been introduced at Amherst College.

A telegram from Shanghai, on the 2d inst., says that the telegraph line from Tientsin to Shanghai has been completed.

If you want to become a telegraph operator, send 25 cents to C. E. Jones & Bro., Cincinnati, O., for best illustrated instruction book.—*Advt.*

The electric light is fast superseding gas in Montreal. On the evening of Dec. 10 for the first time a great many large stores were illuminated by it.

During the three months of the Electrical Exhibition at Paris the electric railway from the exhibition building to the Place de la Concorde carried 84,000 passengers.

The Blanchard Prepared Liquid Foods for Dyspeptics aid digestion and restore the natural

functions. Explanatory pamphlet, free. The Blanchard Manufacturing Co., 27 Union square, New York City. *Advt.*

The land section of Mr. Jay Gould's second American cable was laid off the coast of Cornwall, England, on the 9th inst. The Chevalier Giovanni Purissimo Morosini is Treasurer of the company.

The London *Standard*, in its financial article of Dec. 12, announces that fresh competition in telegraphic communication with America and India may be looked for from a new company to be launched next month.

Mayor King, of Philadelphia, is so well pleased at the results of lighting a portion of Chestnut street, in that city, by electricity that he wishes the system introduced throughout all the large thoroughfares of the city.

The telegraph office at Anaheim, Cal., was burned about Nov. 15. The lady operator, who had rooms in the same building, was fortunately absent for the night, but suffered the loss of her wardrobe and other personal effects.

Sufficient capital has been found to support a permanent electric railway in the French capital. Plans have also been drawn up for an elevated electric railway around the city of Paris, and Mr. Siemens is considering them.

The Blanchard Prepared Liquid Foods for Dyspeptics aid digestion and restore the natural functions. Explanatory pamphlet, free. The Blanchard Manufacturing Co., 27 Union square, New York City. *Advt.*

The Mutual Union Telegraph Company intend opening offices at Sandy Hook, Fire Island and the Highlands, for the reporting of vessels off the points named. The arrivals will be promptly bulletined to the government offices in this city, and afford rapid information of the foreign mail steamers.

On Monday, the 26th inst., and on Monday, Jan. 2, Western Union office hours will be from 8 to 10 o'clock A. M., and from 4 to 5 o'clock P. M., except at repeating stations and principal offices, which will be kept open as usual, but with such reduction of force on duty as circumstances will permit.

*Managers and Operators* suffering from paralysis, or writers' cramp, will do well to send to Brown, Pettibone & Kelly, Stationers, 194 and 196 Dearborn street, Chicago, for circular and treatise of Farnham's Armaline. It will give immediate relief. Testimonials received from all parts of the country.—*Advt.*

An attractive half-page advertisement of the Electrical Supply Company will be found in the present issue. This company does a large business in insulated wires, cables and cords, telegraph, telephone and electric light supplies, and the like, and has recently issued a new price list, which will be mailed free on application.

A California correspondent, in writing about the "Union Electric Telegraph Instruction Company," and reviewing its circular, asks: "If 'Prof.' Henry C. Roeth has the 'influence' he claims and operators get such good salaries for so little labor, why don't he himself go into the legitimate business of operating? Will he please rise to explain?"

On the evening of Friday, Dec. 2, Chestnut street, Philadelphia, was illuminated for the first time with the Brush electric light from the Delaware to the Schuylkill rivers, a distance of 2½ miles. The illumination has continued satisfactorily every night since, and the Mayor is so well pleased with it that he will recommend its adoption on other thoroughfares.

The stockholders of the International Ocean Telegraph Company elected the following Board of Directors on the 5th inst.: Norvin Green, Augustus Schell, Harrison Durkee, Edward S. Sanford, Moses Taylor, James O. Green, Roswell H. Rochester, Robert C. Livingston, Jay Gould. A dividend of 2 per cent., payable Dec. 31, was declared. The transfer-books will close Dec. 24.

At Manchester, England, on Nov. 18, a man named Watson was committed to the assizes, charged with inducing a telegraph operator to reveal to him the contents of sporting telegrams. The prisoner was seen to pick up a piece of paper, thrown to him out of a window in the telegraph office, and on being examined it was found to contain information respecting that day's racing at Aintree, near Liverpool.



Our New York contemporary, THE OPERATOR, has issued a special number for Nov. 1, which consists of thirty-six pages. It says much for the interest taken in telegraphic matters in the United States that our contemporary should be in a position to print and publish such a number, and we congratulate THE OPERATOR on its enterprise. Our opinions do not always accord with those of our contemporary, but we wish it all prosperity nevertheless.—*Electrician*.

The old and reliable Blanchard Prepared Foods for Dyspeptics are made under the supervision of an eminent physician, and from certain selected vitalizing elements contained in the three great life staples—beef, wheat and milk—carefully and specially prepared to meet all conditions, from the weakest to the strongest. No stomach too weak to digest these foods. Lady in attendance to give ladies full information. Write for free explanatory pamphlet or call. Don't fail to investigate. The Blanchard Manufacturing Co., 27 Union square, New York City, N. Y. *Advt.*

The Rhodes electric gas lighting burner, advertised in this issue, deserves the attention of electricians and others interested in this subject. The burner is as simple as it is ingenious. By merely pressing a button the gas is instantly turned on, and by depressing another button it is turned off. By attaching the wires to the doors and windows, moreover, and setting them for that purpose, any attempt to enter the house by burglars will be immediately followed by the sudden lighting of the gas. Mr. Rhodes has just got out an 8-page circular explaining the operation of the burner. Copies of the circulars will be mailed free.

William Hendrey Cameron, of Providence, R. I., has filed a bill in equity before Judge Blatchford, in the United States Circuit Court, this city, against the Mutual Union Telegraph Company, asking that it be enjoined from issuing its capital stock in accordance with the company's present plans. Mr. Cameron claims to be the owner of 75 shares of stock of the original capital of the Mutual Union. The stock, it is alleged, was bought in good faith in the open market and at the full market price. It was bought when the capital stock of the company was \$600,000, divided into 6,000 shares of \$100 each. Subsequently the capital stock was increased to \$10,000,000, in selling which the company gives with every bond sold a share of stock as a bonus—that is, a cash investment of \$10,000 secures \$10,000 in bonds and with the bonds \$10,000 in stock. The answer of the Mutual Union Company to Mr. Cameron's complaint will be that he is guilty of false representation. Not a share of the original \$600,000 of stock has been put upon the market. It is now, and always has been, locked in the Mutual Union safes. Secretary Peck, of the Mutual Union, says that the suit is simply a move made by the Western Union Telegraph Company. "I knew ten days ago," said Mr. Peck, "that Erastus Wiman, as a Director of the Western Union had secured the services of Cameron, and that this suit was to be brought."

## NEW YORK CITY ITEMS.

### Echoes From 195.

Geo. Cumming and Billy Blanchard are the champion sneezers on the night force.

An advertisement of board with a desirable family on Brooklyn Heights, to be found in this issue, deserves the attention of telegraphers of this city on the lookout for such accommodations.

Owing to the unprecedented increase in the number of wires, another addition to the switch has been built for the city and L. I. circuits. The present crowded appearance of the office is hardly to be recognized as the same barn-like place of 1875.

The operating room was well ventilated on the day of the last issue of THE OPERATOR, but the following day things were as bad as before. There should be some systematic plan for ventilating this immense and crowded room. When the plan has been agreed upon by the proper authorities, grumblers should submit or move their location.

It is rumored that the Gold and Stock has been entirely absorbed by the Western Union. "It is to be hoped," says a correspondent, "that

the rooting-out plan so energetically adopted and carried out by Gen. Eckert since his accession to the general management will be continued in these premises, where there is such a wide field for reform and curtailment."

The Associated Press rooms are getting to be quite a telegraphic centre. Besides the Eastern, Western and State wires which have been worked there for some time past, the regular Washington and Philadelphia circuits have now a separate room. Three new quad tables have been put up, and a number of new men added to the force, among the number our old friend Mr. R. B. Emerson.

One of the accessions to the night force is Dr. Henry V. Warren, who, having taken degrees in two Western colleges, has come to the Metropolis to accept its advantages for study and observation. As a telegrapher the doctor has few equals and no superiors, and his urbane manner makes him at once the favorite of all. He has fitted up an office at 36 Great Jones street, where he practices the arts of his profession.

Mr. Charles T. Smith, who has been for some years past in charge of the W. U. lunch room, is one of the oldest telegraphers living, he having been employed on the first experimental Morse line from Washington to Baltimore. Mr. Smith is a gentleman of rare and versatile talents, being at once an electrician, an artist, a chemist and an inventor. Some of the first lines owed their successful operation to his careful construction and valuable suggestions, and many important improvements have had their birth in his inventive brain.

### Other City Items.

Mr. T. Wright, of East Albany, has been appointed operator at Fifty-ninth street, on the N. Y. C. & H. R. R. R., this city.

The American Rapid Telegraphers' Association will hold a complimentary reception at Caledonia Hall, Horatio street, on Friday evening next, Dec. 16.

A concert and literary entertainment is to be given at Tenafly, N. J., Dec. 2, at which we notice Miss Lottie Atwater, daughter of Manager H. H. Atwater, of the Continental Company's Wall street office, is to render two solos.

The American Electric Light Company met in this city Dec. 7, and elected the following-named gentlemen directors for the ensuing year: Elisha W. Andrews, Hon. Thomas C. Platt, Frederick D. Grant, Hon. William Windom, H. R. Garden, Edwin M. Fox, H. T. Jenkins, William Richardson and S. F. Moriarty.

At the annual meeting of the stockholders of the International Ocean Telegraph Company, which was held in this city Dec. 6, the following directors were elected to serve for the ensuing year: Messrs. Norvin Green, Augustus Schell, Harrison Durkee, Edward S. Sanford, Moses Taylor, James O. Green, Roswell H. Rochester, Robert C. Livingston and Jay Gould. A dividend of 2 per cent. was declared, payable Dec. 3.

At the Dec. 21st meeting of the N. Y. Electrical Society, Chief Operator E. A. Leslie will read a paper on "The Stearns Differential Duplex and the Western Union Standard Quadruplex." This is a subject on which many of the members have desired information for a long time, and as Mr. Leslie will enter into details and make plain the intricacies of the multiple systems now in use by the Western Union, the attendance ought to be large.

Miss Ella Gartlan, of the Spring street office, Metropolitan T. & T. Co., this city, made 695 connections on Nov. 23. This is the largest number ever made by a single operator in this office in one day. A twelve strip table is used, and an average of six hundred connections is made daily. The Spring street is the banner office of the district. Mr. Sam'l B. Van Nortwick, a well-known ex-telegrapher, is manager, to whose skill and the efficient corps of lady operators under his charge is due the credit for the excellent manner in which business is attended to and satisfaction given to subscribers.

At the meeting of the Board of Aldermen on Tuesday last, Dec. 13, Alderman Cavanagh called up the Mayor's veto of the franchise given to the Metropolitan Telephone and Telegraph Company, permitting it to lay wires and apparatus

under, over, through or on the streets of the city for the nominal consideration of one cent per foot of street used. The Alderman moved its adoption notwithstanding the Mayor's veto. Alderman Hawes made a vigorous speech in opposition to the resolution, and stated that the company owned a controlling interest in all the other telephone companies in this city, was a big and dangerous monopoly, and ought not to be given such a sweeping franchise for a merely nominal compensation. The Alderman's speech was useless, however, for the resolution was adopted by a vote of 16 to 6.

135.—This office is but the skeleton of what it was a year ago, when the American Union was at its best. Then the time-roll showed 150; while to-day it contains but 35 names. Mr. Dealy is a frequent visitor, and seems to take pleasure in greeting the few of the old force that still remain here. Conrad A. Myer is manager and George Stainton chief operator. These gentlemen, it will be remembered, were elected by the operators of the office second and third assistant chiefs, respectively, and have succeeded to their present positions through regular promotions in the office. J. Barnard Quinn and Joseph O'Leary are the more recent transfers to "195;" also, Miss J. Kearnan. Charlie Hanson and John Dempsey have secured good positions with the Baltimore & Ohio in this city. They were formerly in Fulton Market office; more recently here. G.

The annual meeting of the Gamewell Fire Alarm Telegraph Company took place at the executive offices of the company in this city, on Tuesday last, Dec. 13. The reports presented showed the financial condition of the company to be in a prosperous condition and the outlook encouraging. A dividend of two per cent. was declared—one per cent. payable Jan. 1 and one per cent. April 1. This is the first dividend thus far paid by the company. An animated discussion took place on the subject of infringements, and resulted in a unanimous resolution that all infringements upon any of the patents controlled by the company should be vigorously prosecuted. The following officers were elected for the ensuing year: Jos. W. Stover, President; Joseph Kinsey, 1st Vice-President; Chester H. Pond (of the Pond Indicator Co.) 2d Vice-President; Otis T. Pettie, Treasurer; John N. Gamewell, General Superintendent; and B. S. Clark, Counsel. The Board of Directors comprise the President, 1st and 2d Vice-Presidents, General Superintendent and Counsel; also, Messrs. Moses G. Crane, of Boston; E. V. Cherry, of Cincinnati; C. D. Haskins, of the Union Electric Mfg. Co., New York; Mr. Tenney, J. F. Miller and Judge Fisher.

## PERSONAL.

Ned Pearson is Western Union operator at Willcox, Arizona.

General Superintendent R. C. Clowry has been paying a visit to his old home, Omaha.

Mr. W. S. Hooper, agent at Colton, Colo., has just returned from a pleasure trip to the East.

Mr. G. Q. Stewart, formerly of Los Angeles, Cal., is now manager of the Western Union office at San Jose.

Mr. A. E. Vandercook, formerly night operator L. E. & W. R. R., Paxton, Ill., has been transferred to Tipton, Ind.

The irrepressible Bogardus has turned up in San Francisco. It is reported that he contemplates an extensive pedestrian tour southward.

Messrs. Kendall and Gray, of Marysville and San Buena Ventura, respectively, are the latest additions to the force of the Los Angeles (Cal.) office.

By the death, at Utica, N. Y., on the 30th ult., of Theodore S. Faxton, the telegraph loses one of its earliest friends and admirers. Mr. Faxton was 87 years of age.

The Los Angeles W. U. office is now under the management of Mr. R. R. Haines, one of the Argonauts of telegraphy upon the Pacific Coast, and a deservedly popular gentleman.

Mr. B. A. Worthington, who filled temporarily the position of chief operator at Los Angeles during Mr. Sherer's absence in the East, has returned to his first love—Sacramento.

Mr. McGlashin, editor of the Santa Barbara



Press, comes forward with an invention, by means of which he hopes to be able to make it possible to telegraph from a train in motion.

Mr. John Barry has been appointed manager of the Grand Transverse, Mich., W. U. office, vice S. C. Fuller, resigned. Mr. Barry has for some time been employed as operator in the same office.

Although the marriage of Mr. Shelley, of the Albany W. U. office, was private, he was the recipient on the occasion of many elegant and costly presents from the host of friends by whom he is held in high esteem.

At Rutland, Vt., Night Operator Murray took the entire President's Message at one sitting, lasting from 2:30 in the afternoon until 4 in the morning. The local papers say the "copy" was accurate and legible throughout.

The operating force at Colorado Springs, Col., consists of Geo. A. Bosworth, manager, and E. H. Betts, late of Denver, night-report man. Mr. Bellmaine, late of the Colorado Springs office, has accepted a position east.

Mr. Lewis B. Foley, of New York, has been appointed Superintendent of Telegraph on the Delaware, Lackawanna & Western Railroad lines. Mr. Foley has long been associated with the company, and his appointment meets with hearty approval in all quarters.

The New Bedford, Mass., W. U. force consists of: Geo. S. Hoyt, manager; H. C. Balles, night press operator; R. C. Crapo, day press operator; J. P. Taylor, operator; E. E. F. Potter, clerk; T. F. Kavanagh, operator at depot, and Wm. A. Gidley, operator at Parker House.

We are pleased to have to record in this issue the marriage of Mr. W. D. Scott, of the cable staff at North Sydney, C. B., to Miss Belle Moffatt, the young lady who bravely rescued Mr. Scott from the water last fall, after he had fallen through the ice while skating, as noted in THE OPERATOR at the time.

Gen. C. Henry Barney has resigned his position as manager of the Inter-State Telephone Company to accept the position of General Superintendent of the Metropolitan District Telephone Company of New York and New Jersey. Gen. Barney also held the position of Adjutant-General of the State of Rhode Island and was Councilman-elect of the Ninth Ward of Providence. Both of these offices he, of course, had to resign. He expects to assume his new duties about Jan. 1.

EASTERN RAILROAD.—The operators of this company gave a ball last season as an experiment. It was so pronounced a success that they have decided to make it an annual affair. The second annual ball will be given at Monument Hall, Bunker Hill District, Boston, on Friday evening, Jan. 13, 1882. A cordial welcome is extended to all members of the profession. Mr. H. M. Forristall, who contributed so largely to the success of last year's party, will be present in the position of floor director.

By a contract recently completed, the Western Union secured control of the lines and offices of the Pensacola Telegraph Company, a local organization reaching all important points in Escambia and Santa Rosa counties, Florida, of which Mr. C. L. Le Baron is President. Mr. L. Le Baron, a well-known and efficient telegrapher of the Pensacola Company succeeds Mr. E. F. Walker as W. U. Manager at Pensacola, Mr. Walker being retained as operator. A branch office has been established at Palafox wharf, with Mr. Ed. Gale Quinn in charge.

Col. T. P. Shaffner, of Louisville, a railroad and telegraph contractor, died of apoplexy in a Troy (N. Y.) hotel, on the evening of Dec. 11. Colonel Shaffner was editor of the *Telegraphers' Companion*, 27 years ago, and author of "The Telegraphers' Manual." He had also, if we mistake not, for some time before his death, been working on an exhaustive telegraphic work. Colonel Shaffner was a representative of the Grand Lodge of Odd Fellows from the State of Kentucky and from the United States. He introduced the present telegraphic system in Russia.

Relative to the shooting of Geo. L. Wentworth, on Thanksgiving Day, by Edward E. Nowell, operator B. & M. R. R., at Salmon Falls, N. H., referred to in last issue of THE OPERATOR, the Biddeford (Me.) *Union and Journal* gives the

following as the facts in the case: "Geo. Wentworth, who is uncle to Edward S. Nowell, had been acting rather wildly that day, and had drawn a revolver upon a man, but was prevented from using it. He finally went down to the depot, where young Nowell is employed as operator, and his father, E. S. Nowell, is agent. After the two Nowells had returned from dinner, Wentworth looked in at the window and made the remark to a by-stander that 'he had some business to transact in there.' Taking hold of his revolver he entered the depot and seated himself in a chair directly in front of the telegraph office, and entered into conversation with Police Officer Wallace. Shortly after, E. S. Nowell entered, and seeing Wentworth told the officer that he wished him taken care of, as he feared for the safety of his own life and the lives of his family. Wentworth immediately sprang from his chair, and drawing his pistol said, 'If that's your game, here goes,' and fired at E. S. Nowell, the ball lodging in the wall beyond, narrowly escaping Mr. Nowell. Wentworth instantly turned on young Nowell, pointing and cocking his revolver, but a ball from young Nowell's revolver prevented his shooting him. Wentworth was immediately seized by officers Wallace and Littlefield, and in the scuffle which ensued was shot in the neck by a ball from his own pistol. Wentworth was conveyed to his home in Dover, and at last accounts was improving. The Nowells are a peaceful and highly-respected family, and have at all times avoided trouble with Wentworth, but he has repeatedly assaulted them and they have been compelled to act on the defensive."

## MARRIED.

SCOTT—MOFFATT.—At North Sydney, C. B., Nov. 5, by Rev. D. McMillan, W. D. Scott, of the W. U. cable staff, to Miss Isabella Moffatt.

GREGORY—BAGLEY.—Nov. 24, 1881, in this city, by Rev. Dr. Deems, Ferdinand W. Gregory to Mrs. Caroline O. Bagley, widow of M. C. Bagley.

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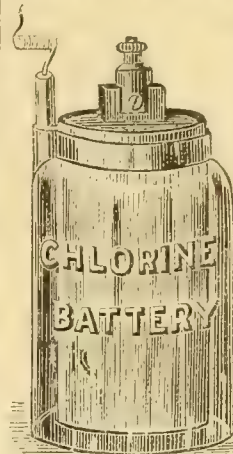
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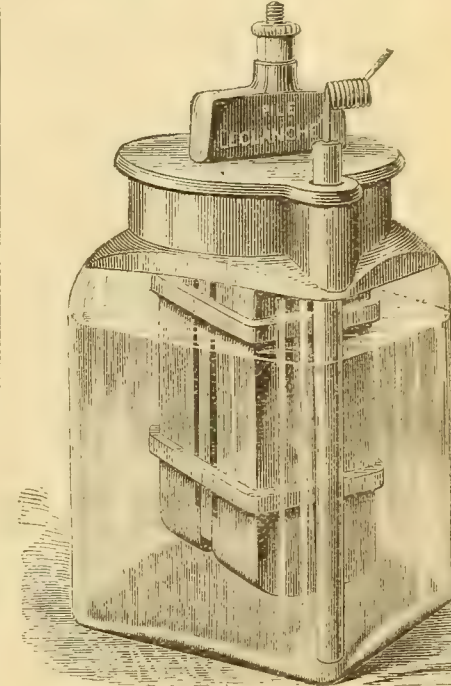
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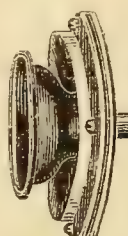
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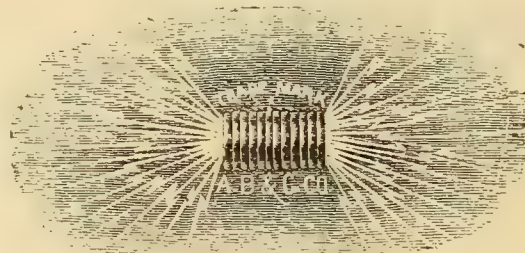
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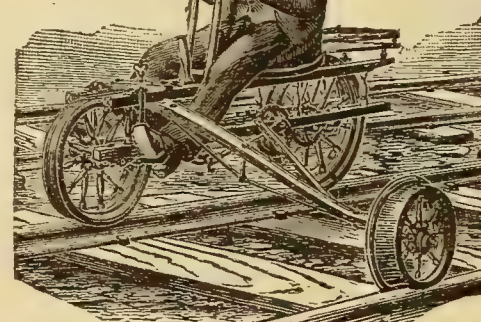
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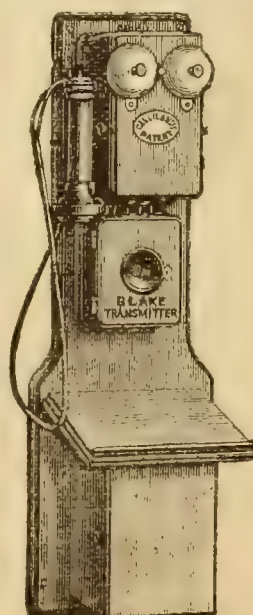
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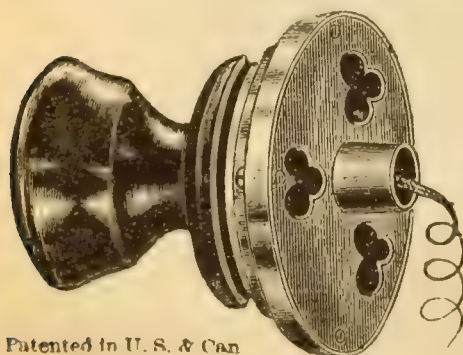
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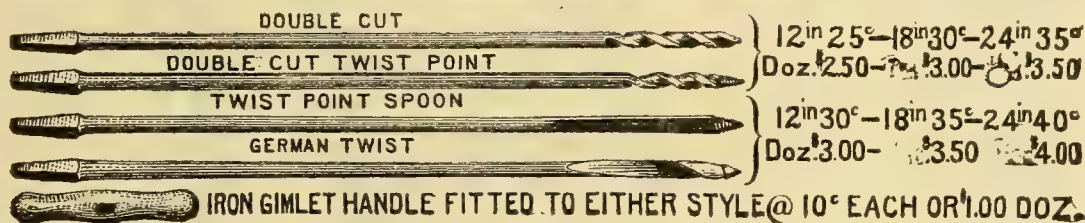
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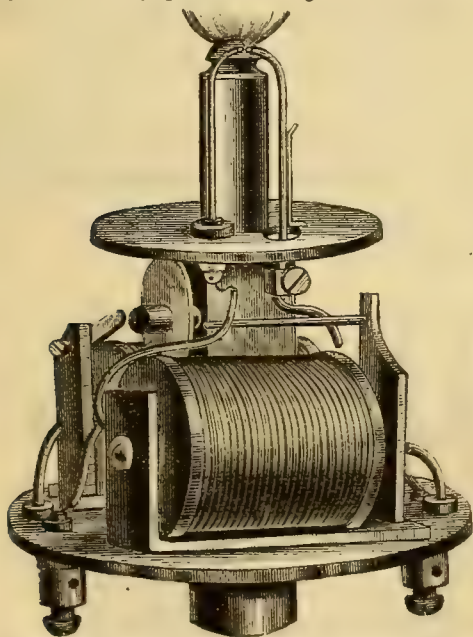
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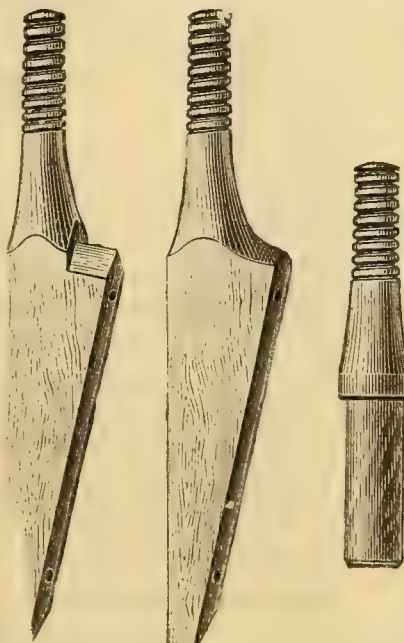
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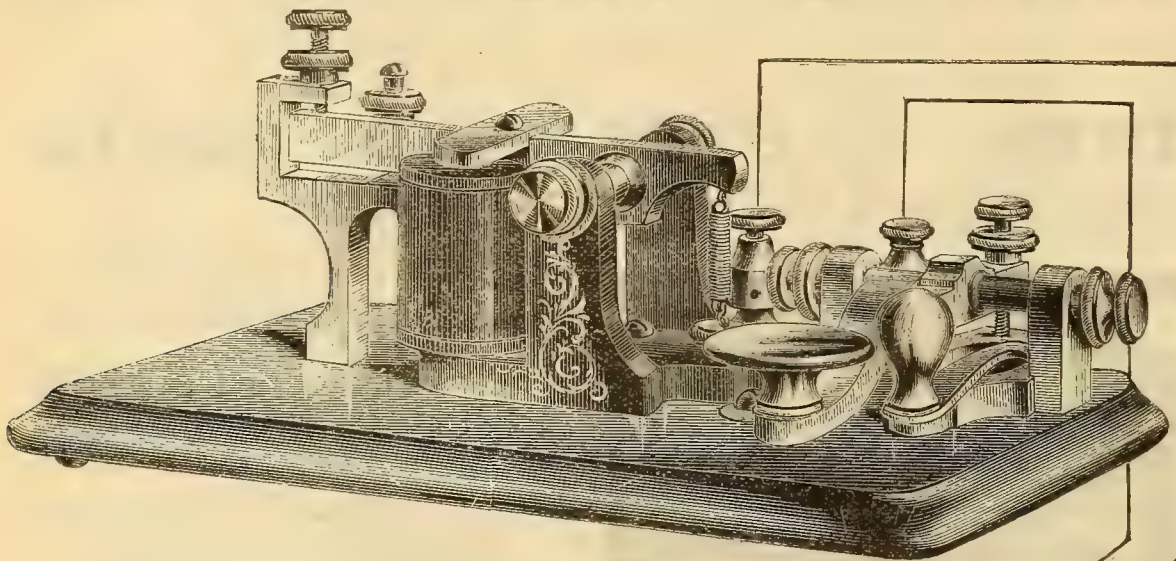
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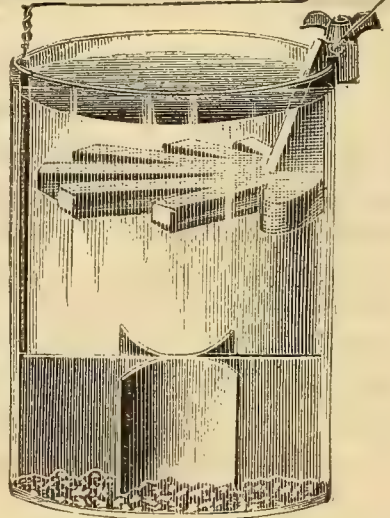
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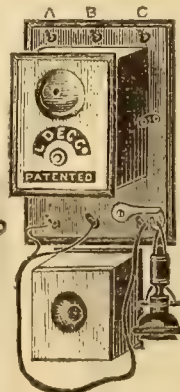
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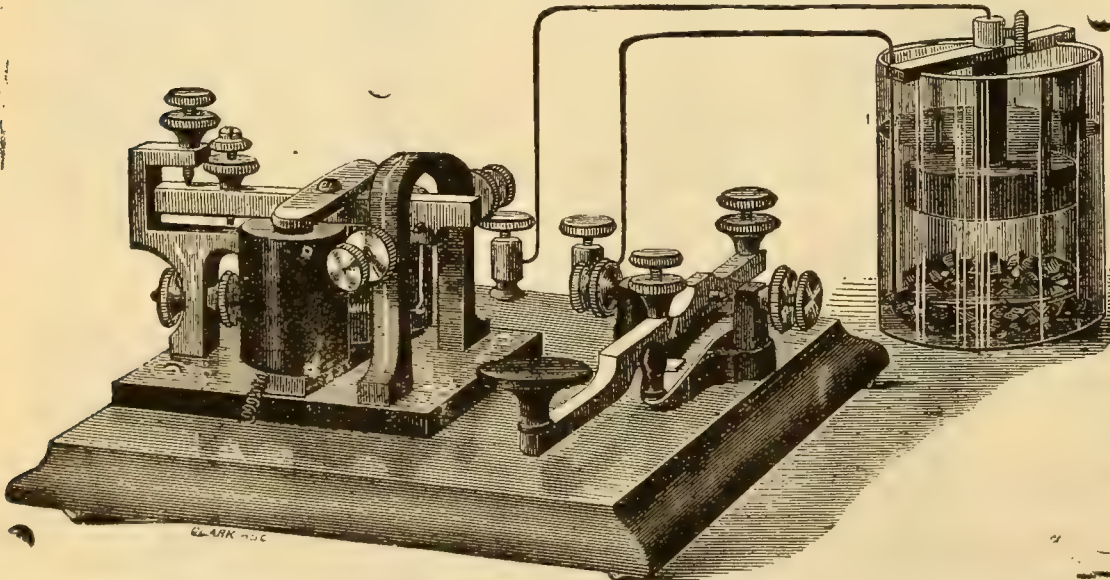
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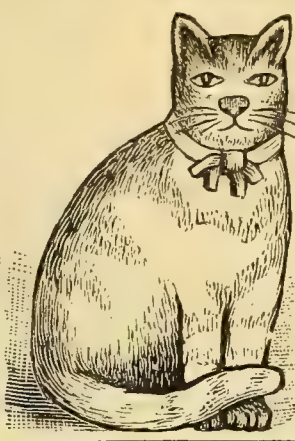
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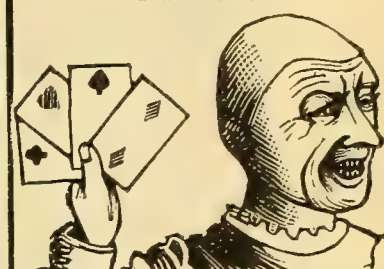


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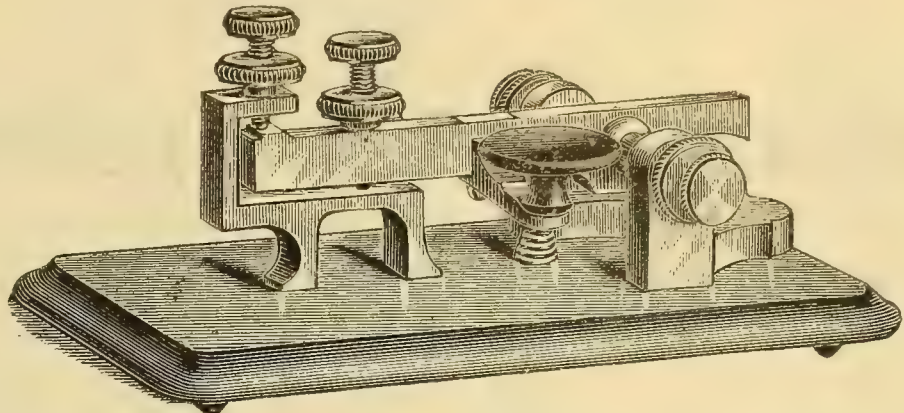
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From a very large number of testimonials on file we select the following, as sufficiently evidencing the high estimation in which the American fire-alarm telegraph is held by those who have fully tested its practical working :

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I take great pleasure in adding my own testimony to the great value and success of the telegraph fire alarm; and I feel confident in saying that wherever once tried it will thereafter be deemed indispensable.

ALEX. H. RICE, Mayor of Boston [1856].

##### ST. LOUIS.

The superintendent of the fire-telegraph of St. Louis, in his report for 1860, says :

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##### TWENTY-ONE YEARS LATER.

The same official in his report for 1881 says:  
"In 1858, when the Electric Telegraph, as applied for fire alarm purposes, was in its infancy, the nucleus of the present system was introduced into this city. It was accepted by the authorities with considerable misgiving as to its practical utility, and it was looked upon generally as an experimental adventure, involving quite a sum of money. As time passed by, however, it gradually began asserting itself; skepticism as to its practical value faded little by little, until finally, guided by scientific research and mechanical improvements, it stands before the world to-day as being one of the most valuable achievements of man."

##### ALBANY.

In this city we would much prefer to have four steamers with the telegraph than eight steamers without it; and the same will hold good in any city. JAS. H. McQUADE, Chief Albany Fire Department.

The fire-alarm telegraph is in complete order, and has worked most satisfactorily during the year. In fact, it has never failed since its construction. It is a most valuable auxiliary to a fire department; for, in truth, without it, it would be unable to maintain the high degree of efficiency shown in our organization. Always reliable, the citizen feels assured that within a few minutes after the discovery of a fire the means will be at hand to extinguish it.—Report of Albany Fire Commissioners, 1874.

##### MONTREAL.

As the simplest illustration of its great value, we have the fires and loss for a fair average year, before and since its introduction.

Before, 85 fires.....	\$140,088 loss.
Since, 99 fires.....	35,428 loss.

A. BERTRAM, C. E. F. D. [1866].

The cost of construction will, of course, depend upon the amount of apparatus required and the extent of territory to be covered. But we have placed the prices of fire-alarm telegraph within the means of all towns, either large or small, willing to expend from \$500 upward to tell their Fire Department on the occurrence of a fire instantly and exactly where it is.

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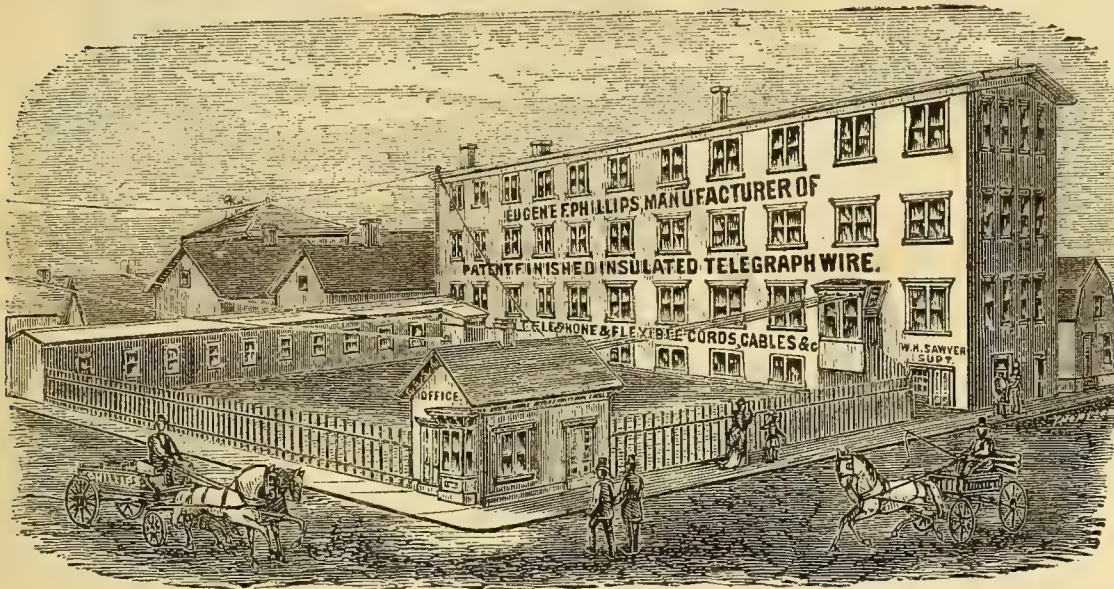
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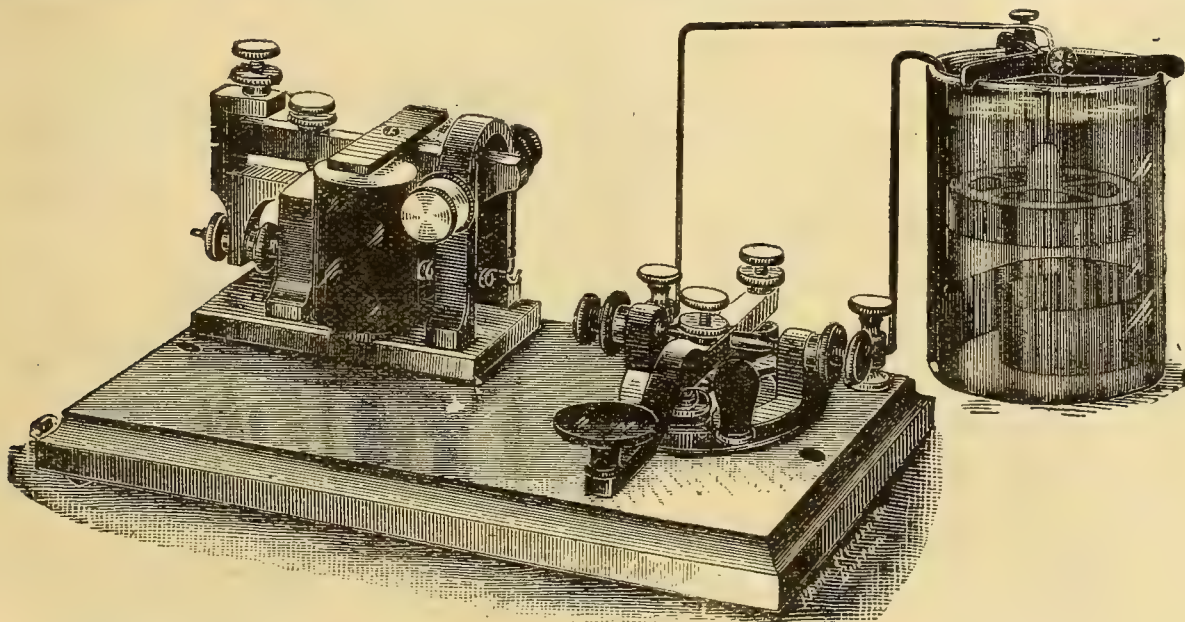
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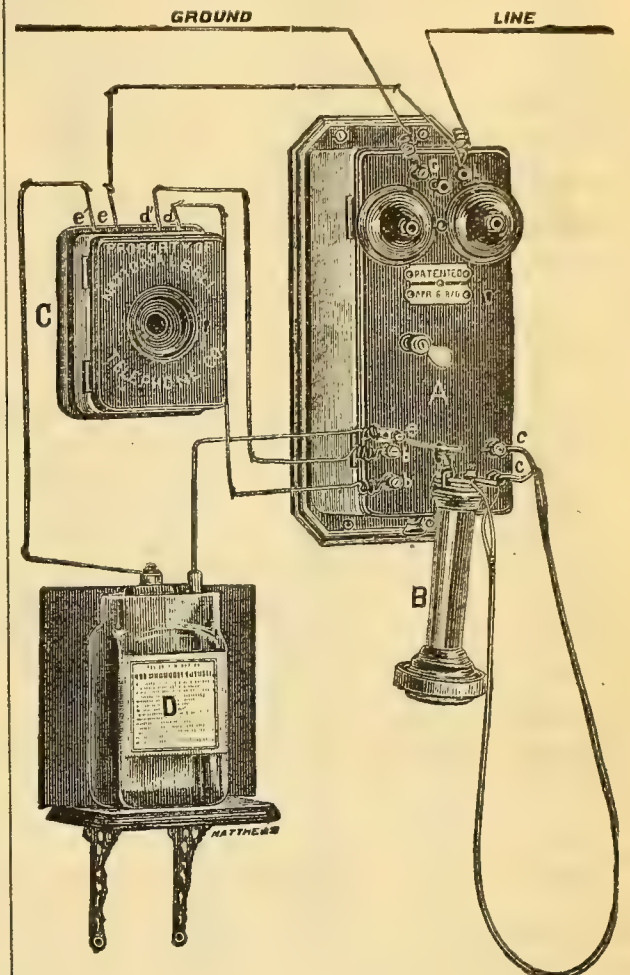
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This Company will arrange for telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

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